DOCUMENT RESUME

ED 246 156 UD 023 679

AUTHOR	Borjas, George, Ed.; Tienda, Marta, Ed.
TITLE	Hispanics in the Labor Force: A Conference Report.
INSTITUTION	Wisconsin Univ., Madison. Inst. for Research on Poverty.
SPONS AGENCY	National Commission for Employment Policy (DOL), Washington, D.C.
PUB DATE	Sep 82
NOTE	459p.; For individual papers, see UD 023 680-687.
PUB TYPE	Reports - Research/Technical (143) -- Collected Works - Conference Proceedings (021)
EDRS PRICE	MF01/PC19 Plus Postage.
DESCRIPTORS	*Birth Rate; Black Employment; Comparative Analysis; *Dropouts; Educational Attainment; Foreign Workers; Higher Education; *Hispanic Americans; Immigrants; Labor Force; Labor Supply; Secondary Education; *Undocumented Immigrants; *Unemployment; *Wages; Whites; Youth
IDENTIFIERS	Private Sector; Public Sector

ABSTRACT

Hispanics in the U.S. labor force are the subject of the studies in this volume. After an introduction by George J. Borjas and Marta Tienda, the first three papers focus on the same issue: the determination of wage rates for Hispanics and comparison of Hispanic and non-Hispanic wage rates. Cordelia Reimers compares the situation for Black, White, and Hispanic males; John Abowd and Mark Killingsworth examine the situation in the Federal and non-Federal sectors; and Steven Myers and Randall King look at youth wage rates. In subsequent papers, Gregory de Freitas examines differences in both the incidence and duration of unemployment among Hispanic men and between Hispanic and non-Hispanic Whites; Stanley Stephenson, Jr., focuses on how individual and market characteristics influence the unemployment rates of Hispanic youth; Neil Fligstein and Roberto Fernandez compare the determinants of high school completion for Mexican-Americans and Whites; and Frank Bean, Gray Swicegood, and Allan King consider how the high fertility rate of Hispanic women influences their labor market behavior and whether nationality produces different patterns of fertility-labor market relationships among Mexican, Puerto Rican, and Cuban-origin women. Finally, Harley Browning and Nestor Rodriguez deal with the process by which undocumented Mexican workers integrate themselves into U.S. society and its labor market. (CMG)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED246156

JUL 16 1984

HISPANICS IN THE LABOR FORCE: A CONFERENCE REPORT

edited by
George Borjas
and
Marta Tienda

September 1982

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION
CENTER (ERIC)

- ✓ This document has been reproduced as received from the person or organization originating it.
- Minor changes have been made to improve reproduction quality.

- Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
Patricia H. McNeill
Natl. Comm. for Empl. Policy
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

Report prepared for the National Commission for Employment Policy by the Institute for Research on Poverty, University of Wisconsin-Madison. The opinions expressed in this report are those of the authors and not of the Commission.

UD023679

Table of Contents

Introduction 1
George Borjas and Marta Tienda

Section I: Earnings 19

1. A Comparative Analysis of the Wages of Hispanic, Black, and Anglo Men
   Cordelia Reimers 21

2. Employment, Wages, and Earnings of Hispanics in the Federal and Non-Federal Sectors: Methodological Issues and Their Empirical Consequences
   John M. Abowd and Mark R. Killingsworth 69

3. Relative Earnings of Hispanic Youth in the U.S. Labor Market
   Steven C. Myers and Randall H. King 153

Section II: Unemployment 199

4. Ethnic Differentials in Unemployment among Hispanic Americans
   Gregory DeFreitas 201

5. Labor Market Turnover and Joblessness for Hispanic American Youth
   Stanley P. Stephenson, Jr. 261

Section III: Educational Transitions 303

6. Educational Transitions of Whites and Mexican Americans
   Neil Fligstein and Roberto M. Fernandez 305

Section IV: Family and Work 357

7. Fertility and Labor Supply among Hispanic American Women
Frank D. Bean, Gray Swicegood, and Allan G. King 359

8. The Migration of Mexican Indocumentados as a Settlement Process: Implications for Work
Harley L. Browning and Nestor Rodríguez 397

4

Introduction

George J. Borjas
University of California, Santa Barbara

Marta Tienda
University of Wisconsin, Madison

Few topics have intrigued social scientists more than the study of social inequality. The voluminous research accumulated in the social science literature has focused on an analysis of the factors which lead to social differentiation. This research has provided useful insights into the operations of various social institutions and labor markets, and it has given policy makers an understanding of the social consequences of changes in government policies.

Sociologists and economists have concentrated their empirical study of social inequality on the dimensions of education, occupation, and income. Economists, and human capital theorists in particular, have made important contributions to our understanding of how labor market outcomes, such as employment patterns and wage rates, differ between men and women, blacks and whites, and workers who are highly differentiated in terms of skills and schooling.[1] Sociologists, on the other hand, have devoted a good deal of attention to the study of individual attainment of education and occupational status by taking the socioeconomic life cycle as a conceptual framework and translating into a specific model the assumptions about how the achievement process operates. Blau and Duncan's (1967) benchmark study, The American Occupational Structure, was the first in this tradition, and it furnished the conceptual and methodological groundwork for much subsequent study.

An important share of the literature on income inequality has focused on the analysis of the economic status of minorities. In economics, such studies have grown rapidly since the publication in 1957 of Becker's seminal work, The Economics of Discrimination. The theoretical thrust of this literature has been the development of various concepts regarding the origins of labor market discrimination. Two basic concepts of discrimination have received careful attention: "taste" discrimination and "statistical" discrimination.[2] The former explicitly introduces prejudice as a deterrent to social interactions among various groups, while the latter focuses on how, in a world marked by uncertainty about the productivity of individuals, economic agents may rationally use race and sex as informational signals.

The empirical literature on labor market discrimination as written by both sociologists and economists has basically addressed two related issues: the measurement of wage differentials between white men and other sex/race groups; and the interpretation of the secular increase in the black relative wage since the mid-1960s.[3] Three major conclusions emanate from these writings. First, the earnings of black men are lower than the earnings of "equally skilled" whites (i.e., with similar observable socioeconomic characteristics). Second, the earnings of women are lower than the earnings of men, although some portion of the male/female wage differential is attributable to the intermittent labor force participation usually exhibited by married women. Finally, the relative earnings of blacks have increased substantially in the last two decades. The interpretation of this fact has been the subject of heated debate, since it has occurred during a time marked by both increases in affirmative action expenditures and the "exodus" of low-wage-earning blacks from the labor market.

As is evident from this brief review, the discrimination literature is remarkable for its (almost) total disinterest in the economic status of groups other than blacks and women. However, the growth of the Hispanic population in the years since World War II, coupled with evidence of increasing diversification among them and the disproportionate representation of Mexicans and Puerto Ricans among the ranks of the poor, encouraged a few social scientists to document the significance of this omission. In 1950, for example, less than 3% of the country's population was of Hispanic origin. By 1980, the same statistic had increased to 6%, or roughly 14 million individuals. The rapid growth of the Hispanic minority is due both to relatively high rates of natural increase and to the continued high levels of immigration from Mexico, Central America, and the Caribbean. This growing visibility of the Hispanic minority has led to predictions in the popular media that, by 1990, Hispanics will become the largest minority, and has led to an increasing awareness of the important socioeconomic and political changes which may occur as Hispanics integrate themselves into U.S. society and its economic and political markets.

In advocating and undertaking research on Hispanics, it is important at the outset to address a fundamental question: what can we expect to learn by studying the economic status of Hispanics in the labor market? In other words, why should the study of the Hispanic minority be intellectually interesting to social scientists in general, and labor market analysts in particular?

At a minimum, the analysis of the labor market characteristics and employment experiences of Hispanics should yield important empirical insights into their economic status and mobility. More importantly, however, several factors suggest that the systematic study of the Hispanic minority and its component national groups has broader scientific implications. In particular, such an undertaking may lead to the development of substantive findings regarding the operation of the United States labor market. For example, one-third of all Hispanics of labor force age are immigrants, and we are just beginning to understand the nature of the labor market and social impact of immigrants. Clearly any study of recent immigration in the U.S. must explicitly analyze the volume, the causes, and the consequences of the large Hispanic immigration in both the sending and receiving communities. Thus, the study of the immigration and social integration experience of Hispanics can be expected to yield insights on such diverse topics as the importance of language acquisition in the labor market; the accumulation of human capital investments by "new" labor market entrants (i.e., the immigrants); and the significance of the reason for immigration (i.e., "economic" immigrants versus political refugees). All of these subjects bear important policy implications, in both the domestic and international arenas.[4]

A second set of issues that the study of Hispanics should help clarify deals with intergenerational mobility as a determinant of labor market outcomes. For example, the 1970 Census indicates that about 45% of all Mexican-origin individuals had foreign-born parents. This empirical fact raises a multitude of possibilities for empirical research on the transmission of human capital from the immigrant parents to the native-born children. Such analyses can provide an important addition to the developing literature on the intergenerational properties of the income distribution.[5]

Third, the study of Hispanics can provide important insights into the role of nationality and ethnicity in determining labor market success. There are five major nationality groups in the Hispanic population: Mexican, Puerto Rican, Cuban, Central/South American, and "other" Hispanics. The hetereogeneity of labor market characteristics among the five groups is remarkable. These groups are located in different geographical regions; their labor force participation rates and employment patterns differ considerably; their average earnings vary notably; so also do their socioeconomic and demographic characteristics. These empirical facts suggest that nationality plays an important part in differentiating this population--one that is critical for labor market success. This is not surprising, as national background has significantly influenced the economic integration of many non-Hispanic groups in the United States. The analysis of the Hispanic population therefore provides a unique opportunity to isolate the factors responsible for the importance of nationality as a determinant of success in the U.S. labor market, particularly since the groups share many cultural traits.

Finally, careful analysis of the Hispanic population should generate important results concerning how the labor market adjusts to large shifts in the supply (both in terms of numbers and skills) of workers. For instance, the Hispanic population has grown so fast that it has been blamed for various changes currently taking place in some labor markets. An important research question, therefore, is the impact of Hispanics on local and regional labor markets. This type of analysis would shed light on how Hispanics affect the earnings, employment, and occupational characteristics of other minority and nonminority groups. More importantly, such studies would deal largely with a fundamental question in economics: how do labor markets work? The systematic study of Hispanics could, therefore, provide significant insights into the adjustment mechanisms in modern labor markets.

Despite the intriguing research and policy problems posed by the study of Hispanic labor market experiences, most of the available studies do not address the broad theoretical issues we have identified. There currently exists a considerable amount of descriptive information about the employment and earnings of the Hispanic-origin groups, and especially about Mexican-origin men in the Southwest. Most of these studies rely on the published 1950, 1960, or 1970 decennial census reports, or public microdata files. Aggregate descriptive reports prepared by government organizations have provided useful baseline information about differences among the various Hispanic national-origin groups, but these data generally do not permit inferences about the matrix of causal forces underlying particular outcomes or differentials.

Evidence based on aggregate descriptions does show, however, that the low occupational status of the Hispanic population has improved steadily since 1930, partly as a result of the geographic redistribution from rural to urban places and the accompanying occupational shifts from agricultural to service, and from low-skilled to semi-skilled jobs. What is less certain is whether the improvements experienced by Hispanics kept pace with those of the non-Hispanic population, and whether these gains in economic standing were uniform among all groups. Available evidence suggests that this may not be the case. Because of the difficulties of adequately distinguishing among the Hispanic national-origin groups until very recently, as well as the problems of comparability introduced by changes in the Spanish identifiers between 1950 and 1970, few researchers undertook comparative analyses of the major Hispanic nationalities, even at a highly descriptive level. This situation changed with the inclusion of Spanish identifiers in the Census Bureau's annual Current Population Surveys during the early seventies, and especially with the release of the 1976 Survey of Income and Education (SIE) microdata file. This data set is the basis for most of the studies contained in this volume.

In summary, while the available literature has not provided a solid understanding of why the Hispanic minority is where it is socially and economically, it has given us a multitude of descriptive empirical relationships that need further exploration, and thus is largely responsible for carving the research agenda for current researchers. The studies in this volume, in fact, are best understood within this framework, since they all have two things in common: (a) refinement of the empirical analysis found in the descriptive literature; and, (b) development of a theoretical framework to aid in the interpretation of these findings and in the use of the analysis for policy purposes.

STUDIES OF EARNINGS DETERMINATION

The papers by Reimers, Abowd and Killingsworth, and Myers and King all focus on the same issue: the determination of wage rates for Hispanic individuals and comparison of Hispanic and non-Hispanic wage rates. The methodology used in these studies depends heavily on the voluminous discrimination literature discussed above. Despite differences in the data sets and the subpopulations analyzed, and in the statistical techniques used, the findings in the three studies tend to be quite similar.

Reimers' study, based on the 1976 SIE, focuses on Hispanic male wage determination. She makes the standard argument that in order to estimate the extent of wage "discrimination" among equally skilled groups, the statistical analysis must control for differences in the observable socioeconomic characteristics (e.g., education, experience, etc.). In addition, she argues that the wage offer distribution is likely to differ from the observed wage distribution. In other words, because a certain fraction of the population opts not to work, given their costs and opportunities, the observed wage distribution cannot be used to predict how much the average Hispanic, or black, or white would earn. Thus, it is necessary to correct for the decision about whether or not to work when comparing earnings differentials among various groups.

Using the Heckman (1979) correction for selectivity, Reimers finds that controlling for differences in socioeconomic characteristics reduces substantially the wage differences between Hispanics and non-Hispanics. For example, among Mexicans, the largest Hispanic subgroup, Reimers finds that the observed wage differential is about 30% for men. Yet, once she controls for differences in socioeconomic characteristics, the wage differential drops to about 5%. In fact, Reimers finds a large number of Hispanic groups for whom the wage--for similar socioeconomic characteristics--is the "same" as that of white non-Hispanic men.

The same types of results are obtained by Abowd and Killingsworth using a different data set and a different statistical framework. They find that for non-Puerto Rican Hispanics, the standardized wage differential is very close to zero. Similarly, Myers and King, using the new National Longitudinal Survey of Youth, find relatively small Hispanic/non-Hispanic wage differentials. All of these studies, therefore, indicate that the low wage level of Hispanics in the U.S. labor market does not result primarily from the type of "wage discrimination" usually found in black/white comparisons. Rather, it is largely due to the fact that Hispanics, on the average, have relatively low levels of those characteristic (in particular, education) which are valued in the labor market. These studies thus suggest a fruitful avenue for future research: the study of differences in the costs and opportunities for human capital investments between Hispanics and non-Hispanics.

UNEMPLOYMENT

Both the DeFreitas and Stephenson papers focus on the importance and impact of unemployment among Hispanics in the U.S. labor market. Based on the 1976 SIE, the DeFreitas study provides a systematic empirical analysis of the unemployment experience of Hispanics, examining differences in both the incidence and duration of unemployment and showing the effects of immigration, education, and other socioeconomic variables on the Hispanic unemployment propensities. He finds that at the national and regional level, Hispanics were considerably more likely to be unemployed one or more times during 1975 than were non-Hispanics. Although Hispanics and non-Hispanics do not differ significantly either in the average duration of joblessness or in the effects of most personal and labor market characteristics on the total length of unemployment spells, the higher rates of Hispanics stem from a greater probability of their experiencing one or more spells of joblessness. DeFreitas' analysis indicates that differences in worker characteristics largely explain the higher incidence of unemployment among Hispanics, but that there is some evidence that differential treatment plays a significant role in generating the higher Hispanic unemployment rates.

Using data from the NLS continuous work history files, Stephenson addresses a different aspect of the unemployment experience by focusing on how individual and market characteristics influence the unemployment rates of Hispanic youth. His results show that family income, marital status, and post-school vocational experience, age, and local unemployment rates significantly influence unemployment propensities, especially among women. Stephenson concludes that Hispanic youth joblessness rates are quite high, due largely to relatively long spells of nonwork after losing a job, and that sex differences occur primarily because women experience a nonwork duration nearly 50% longer than their male counterparts. These findings suggest how policy measures can be targeted to reduce unemployment among Hispanic youth. What remains to be examined by future research is whether and how the experience of extensive unemployment during the early stages of the work cycle ultimately influences adult work experiences. Future research should develop strategies to relate the findings of both the DeFreitas and Stephenson papers.

EDUCATIONAL TRANSITIONS

The available research and papers described above identify low educational achievement, particularly among Mexicans and Puerto Ricans, as a major determinant of low Hispanic earnings and high unemployment rates. This problem originates in the unusually high dropout rates characteristic of Hispanics.

Using 1979 NLS data, Fligstein and Fernandez probe the question of the determinants of high dropout rates for Mexican Americans. Because of the sample size, reliable analyses were not possible for the remaining Hispanic groups. The authors' model of the process of educational attainment for Mexican Americans includes elements reflecting the general process of educational attainment in the United States together with ethnic and cultural factors that are unique to Mexican Americans. By comparing Mexican Americans and Anglos, they isolate factors that partly account for the observed differentials.

For Mexican Americans, failure to reach high school completion is the major barrier to educational achievement. However, those who do graduate go on to college at higher rates than do whites, despite their lower socioeconomic origins. As for whites, general family background factors influence Chicano school attendance and delay in a grade, but only one of the ethnic factors--migration history—consistently affects high school and college attendance and delay in high school. From their results, Fligstein and Fernandez conclude that programs designed to improve the English proficiency of Chicanos and to reduce school segregation should enhance Chicanos' school completion rates. Two general research questions remain for future analysts. One involves determining whether the pattern observed for Chicanos also holds for other Hispanics, and another involves exploring how school curricula, including the availability of bilingual education programs, influences the school performance of Hispanic youth.

FEMALE EMPLOYMENT AND UNDOCUMENTED IMMIGRATION

The employment patterns of women and immigrants, especially those who are undocumented (lack legal authorization), illustrate how differential access to and success in the U.S. labor market contribute to social inequality. The paper by Bean, Swicegood, and King addresses an important research problem that has not been studied by analysts of the female labor force: how does the high fertility of Hispanic women influence their labor market behavior? And, does nationality produce different patterns of relationships among women of Mexican, Puerto Rican, and Cuban origin?

Bean and his associates focus on the relationship of fertility and labor supply among Hispanic-origin women, aiming to test several specific hypotheses that derive from the general notion that the trade-offs women make between child care and work outside the home--known as the "role-incompatibility hypothesis"--are in conflict with one another. They base their study on a subsample of the SIE suited to test these hypotheses: currently married Hispanic origin women aged 20-34. Although there are differences in the extent to which the role-incompatibility hypothesis describes the fertility and labor force behavior of Mexican American, Puerto Rican, and Cuban-origin women in general, the pattern of results is consistent with its predictions; namely, high fertility will depress female labor supply if and when women are placed in situations where they must choose between employment and mothering.

In explaining why their results differed among groups, Bean and his associates conjectured that residing and working in ethnic enclaves may account for the positive influence of the husband's income on the labor supply of Cuban-origin women. In particular, the less constraining influence of fertility and labor supply that occurs with rising socioeconomic status among Cuban-origin women may partly reflect the greater likelihood of self-employment and greater opportunities to employ domestic servants, two circumstances which enhance their ability to employ alternative child care arrangements. This speculation awaits further exploration, but it is an intriguing question which should help clarify the significance of national origin and residential concentration in differentiating the Hispanic-origin population.

Of all the issues that have turned policy and research attention toward the Hispanic population, perhaps none has received as much popular and academic attention as that of undocumented immigration. And yet this is an area where researchers concede they have much to learn. Based on an ethnographic study of two Southwestern cities, the paper by Browning and Rodríguez deals with the process by which undocumented Mexican workers integrate themselves into U.S. society and its labor market. By focusing on the settlement process rather than the process of migration per se, they address issues which greatly concern policy analysts. Their paper differs from the others in this volume in that the models elaborated are geared for a conceptual and ethnographic, rather than an empirical econometric, analysis. The richly textured evidence garnered from the field-work provides many insights into the process by which undocumented laborers enter the labor force and the multiple strategies they use to sustain themselves socially and economically.

An important finding that deserves to be highlighted is that considerable separation and insularity characterizes the insertion of undocumented workers in the U.S. social structure and labor market. Undocumented workers maintain a certain social distance even from the Chicanos who allegedly serve as a general host community. Not only does this indicate some containment of their labor market mobility, but it also suggests that national origin per se is not the sole dimension of ethnicity which determines how workers fare in the U.S. occupational structure. Undocumented workers do not attain status through occupational or job mobility, as do Chicanos, but rather by financial accumulation. Their prospects for mobility in the U.S. occupational structure are largely intergenerational, for few undocumented workers escape the exploitation of low-skilled, low-paying jobs.

Although these studies do not exhaust the range of research and policy issues needed to help us better understand the labor market experiences of Hispanic origin workers in the United States, taken together they represent an important contribution toward the goal of clarifying why Hispanics do not fare as well as non-Hispanic whites in the labor market. Through their empirical findings, and the new questions generated in the process, these papers have begun to fill an enormous research gap.

Notes

1. See, for example, the work of Becker (1975) and Mincer (1974). A recent survey of the human capital literature is given by Rosen (1977).

2. See the recent theoretical developments in Arrow (1973), Borjas and Goldberg (1978), and Phelps (1972).

3. See, for example, Freeman (1981) and Smith and Welch (1977).

4. For a modern analysis of the labor market characteristics of immigrants in the United States, see Chiswick (1978).

5. For a theoretical development of this issue, see the pathbreaking work of Becker (1981).

References

Arrow, Kenneth J. 1973. The theory of discrimination. In Orley Ashenfelter and Albert Rees, eds., Discrimination in labor markets. Princeton: Princeton University Press.

Becker, Gary S. 1957. The economics of discrimination. Chicago: University of Chicago Press.

Becker, Gary S. 1975. Human capital. 2nd ed. New York: National Bureau of Economic Research.

Becker, Gary S. 1981. A treatise on the family. Cambridge, Mass.: Harvard University Press.

Blau, Peter M., and Otis Dudley Duncan. 1967. The American occupational structure. New York: John Wiley.

Borjas, George J., and Matthew Goldberg. 1978. Biased screening and discrimination in the labor market. American Economic Review, 68, 918-922.

Chiswick, Barry R. 1978. The effect of Americanization on the earnings of foreign-born men. Journal of Political Economy, 86, 897-922.

Freeman, Richard B. 1981. Black economic progress after 1964: Who has gained and why? In Sherwin Rosen, ed., Studies in labor markets. Chicago: University of Chicago Press.

Heckman, James J. 1979. Sample selection bias as a specification error. Econometrica, 47, 153-162.

Mincer, Jacob. 1974. Schooling, experience, and earnings. New York: National Bureau of Economic Research.

Phelps, Edmund S. 1972. The statistical theory of racism and sexism. American Economic Review, 62, 659-661.

Rosen, Sherwin. 1977. Human capital: A survey of empirical research. Research in Labor Economics, 1, 3-39.

Smith, James, and Finis Welch. 1977. Black-white male earnings and employment: 1960-1970. American Economic Review, 67, 323-338.

Section I: Earnings

A Comparative Analysis of the Wages of Hispanic, Black, and Anglo Men

Cordelia Reimers
Department of Economics
Hunter College of the City University of New York

The original version of this paper was presented at the Hispanic Labor Conference, Santa Barbara, California, February 4-5, 1982. This research was supported by the U.S. Department of Labor, Employment and Training Administration, grant no. 21-34-78-60, for research on Hispanic American labor market problems and issues. I am indebted to Gilles Grenier and Jesse Abraham for excellent research assistance. Barry Chiswick, Ralph Smith, Marta Tienda, and members of the Princeton University Labor Economics/Industrial Relations Seminar made useful suggestions.

A Comparative Analysis of the Wages of Hispanic, Black, and Anglo Men

Hispanic men, like blacks, have lower average wages than white non-Hispanic men. The Hispanic/Anglo wage ratio for men in 1975 ranged from .72 for Mexicans to .89 for Cubans.[1] That Hispanics are a disadvantaged group in the U.S. labor market is widely recognized; little is known, however, about the specific sources of this disadvantage. For example, how much do lower education levels, younger average age, recency of immigration, English language problems, or residence in low-wage areas of the country contribute to the Hispanics' lower wages? How important is labor-market discrimination?

This paper analyzes the wage structure of Hispanic men to provide a detailed picture of the factors contributing to their wages. The wages of black and white non-Hispanic men are also analyzed, for purposes of comparison. We first look at the average values of various wage-related personal characteristics for each ethnic group. To find out how important these characteristics are in determining wages, we then estimate a separate wage function for each ethnic group: Mexicans, Puerto Ricans, Cubans, Central and South Americans, "other Hispanics," black non-Hispanics, and white non-Hispanics. The data are from the 1976 Survey of Income and Education. The wage samples consist of male civilian employees aged 14 and above who were not self-employed nor full-time students. These wage samples contain about 60% of the total number of males in the data set.

Because the observed wage structure is affected by the decisions men make about whether or not to participate in the wage and salary sector as well as by the wage offers they receive, we correct for possible sample selection bias to get consistent estimates of the parameters of the wage-offer function facing each ethnic group. A group's wage-offer function shows the effect of various personal characteristics on the average wage offered by employers to members of the group, whether or not the offers are accepted and the individuals appear in the wage sample. The group's observed-wage function, on the other hand, shows the effect of these characteristics on the average wage that is actually observed in the wage sample. The average observed wage will differ from the average wage offer if inclusion in the wage sample is not random with respect to the wage offer. For example, if those who receive unusually low wage offers are less likely to accept them, the average observed wage will be higher than the average wage offer.

Examination of these parameters of the wage function reveals, among other things, to what extent English-language deficiencies reduce wages, whether black Hispanics earn less than white Hispanics, and whether minorities earn more in the public than the private sector. They also tell how rapidly immigrants' earnings rise after they come to the United States, how the returns to foreign schooling and work experience compare with the returns to schooling and work experience acquired in the United States and how these returns vary across ethnic groups.

Finally, we want to know how much the differences in average personal characteristics—education, age, recency of immigration, etc.—and in parameters of the wage function contribute to the observed wage differentials between minority men and white non-Hispanics. To answer this question, we present a detailed breakdown of the observed wage differentials, showing the portions due to (1) differences in sample selection bias; (2) geographical differences in price levels; (3) differences in average personal characteristics, broken down to show education, potential work experience, nativity and date of immigration, English fluency, etc., separately; and (4) differences in parameters of the wage function due to labor-market discrimination and other omitted factors.

The next section describes the data and specification of the wage function in detail. We then present the average wage-related characteristics of the various ethnic groups. The following section discusses the estimated parameters for specific variables, their magnitudes, and intergroup variation. Next we describe the breakdowns of the minority-Anglo wage differentials for each ethnic group. Our major conclusions are summarized in the final section.

DATA AND MODEL SPECIFICATION

The Survey of Income and Education, conducted by the U.S. Bureau of the Census in the spring of 1976 on a sample of over 150,000 households in all fifty states and the District of Columbia, furnished the data for this study.[2] Detailed information on employment, sources and amounts of income, race, sex, age, ethnicity, nativity, immigration date, education, language usage, health status, and family composition are available. Ethnicity was self-identified by the response to the question, "What is _____'s origin or descent?" accompanied by a list of ethnic groups. Race was assigned by interviewer observation. The most serious omissions are measures of accumulated work experience, job training, and ability. Wage rates are not reported directly, but must be computed from reported annual earnings, total weeks worked, and usual hours worked per week in 1975. Despite these shortcomings, the Survey of Income and Education is an attractive data set for investigating Hispanic-Anglo earnings differentials because it contains immigration and language information and because the large sample enables one to examine relatively small ethnic groups, such as Cubans, separately.

The data in the Survey of Income and Education reflect the conditions of a recession year, 1975. Since all sorts of differentials in the labor market tend to widen in recessions, our findings may not represent "normal" conditions. We minimize this potential problem by focusing on wage rates, which fluctuate less over the cycle than employment or hours, and by taking account of sample selection bias in estimating the wage functions. Therefore, intergroup variations in employment over the cycle should not affect our results.

From the Survey of Income and Education we took the records of every male aged 14 or older who identified himself as being of Hispanic origin--i.e., Mexican American, Chicano, Mexican, Mexicano, Puerto Rican, Cuban, Central or South American, and the residual category of "other Hispanic." The first four groups constitute our "Mexican" category. We also extracted random samples of households headed by white and black non-Hispanics. Our seven samples are mutually exclusive: the Hispanics may be of any race; the whites and blacks include non-Hispanics only. Non-Hispanics who are neither white nor black (e.g., Asians) are excluded from this study.

For estimating the wage function, we restricted the samples to those for whom a reasonably accurate wage rate could be obtained by dividing annual earnings by annual weeks worked times usual hours worked per week in 1975. The wage samples were therefore composed of civilians who worked for pay in 1975; whose earnings were from wages and salaries only; who were either not enrolled in school on February 1, 1976, or had worked over 1250 hours in 1975 if they were enrolled; for whom we had complete information on the explanatory variables; and whose hourly earnings, adjusted for the cost of living, were between 10 cents and 50 dollars for Hispanics and blacks and between 10 cents and 100 dollars for white non-Hispanics. Examination of the hourly earnings distributions for each group revealed a few cases with such extremely low or high values that it seemed they must result from errors in reporting earnings or weeks or hours; because such extreme values would exert a great deal of leverage in an ordinary least squares regression, it seemed desirable to exclude them from the samples rather than to treat them as ordinary errors-in-equation.[3] Thus we excluded the self-employed, students working part-time, Armed Forces personnel, unpaid family workers and others with no reported earnings, those lacking information on such explanatory variables as language fluency and health status, and a handful of outliers on hourly earnings. The reasons for the first three exclusions are as follows: for the self-employed, computed hourly earnings are likely to be a very poor measure of the wage rate; weeks and hours worked are not available for the Armed Forces; and students often choose part-time jobs for convenience, at wages that do not reflect their human capital.

The wage samples, thus restricted, contain only about 60% of the males aged 14 or older in the data set. Moreover, inclusion in our wage sample is the consequence of several decisions by a respondent that might very well be nonrandom with respect to the stochastic error in the wage equation, and which may therefore bias the results. He must have chosen to be a civilian wage and salary employee rather than a full-time student, a self-employed person, a nonmarket worker, a retiree, or a member of the Armed Forces. This decision was presumably the outcome of optimizing behavior with respect to the current use of his stock of human capital. Because omitted variables that affect one's productivity in the wage and salary sector probably affect one's productivity differently in the education, Armed Forces, self-employment, and nonmarket sectors, we would expect some systematic censoring of the sample to occur, with attendant bias to the estimated coefficients of the wage equation.

To see this, let the wage-offer function for individual i in group j be

(1) $\ln W_{ij} = X_{ij}\beta_j + \varepsilon_{1ij}$.

Let the rule governing participation in the wage and salary sector be as follows: individual i in group j participates if and only if

(2) $Z_{ij}\gamma_j + \varepsilon_{2ij} > 0$.

In these expressions, $\ln W_{ij}$ is the natural logarithm of the wage rate, X_{ij} and Z_{ij} are vectors of known individual characteristics, β_j and γ_j are vectors of unknown coefficients that are common to the members of the group, and ε_{1ij} and ε_{2ij} are random errors that reflect unknown influences on the wage rate and the participation decision, respectively. ε_{1ij} and ε_{2ij} are jointly normally distributed, with

$$E(\varepsilon_{1ij}) = E(\varepsilon_{2ij}) = 0$$

$$\mathrm{Cov}(\varepsilon_{1ij}\varepsilon_{2i'j'}) = \begin{bmatrix} \sigma_{11j} & \sigma_{12j} \\ \sigma_{12j} & 1 \end{bmatrix} \text{ if } i = i' \text{ and } j = j',$$

$$= 0 \text{ if } i \neq i' \text{ or } j \neq j'.$$

Then, as Heckman (1979) has shown,

$$(3) \quad E(\ln W_{ij} \mid \text{in sample}) = X_{ij}\beta_j + E(\varepsilon_{1ij} \mid \text{in sample})$$
$$= X_{ij}\beta_j + \sigma_{12j}\hat{\lambda}_{ij}$$

where $\hat{\lambda}_{ij} = f(Z_{ij}\hat{\gamma}_j)/F(Z_{ij}\hat{\gamma}_j)$, in which f(.) is the standard normal density function, and F(.) is the standard normal distribution function. If participation in the wage and salary sector is not random, given one's observed characteristics, so that $\sigma_{12j} \neq 0$, then $E(\varepsilon_{1ij} \mid \text{in sample}) \neq 0$ and ordinary least squares estimates of β_j will be subject to a type of "omitted variable" bias.

Therefore, to get consistent estimates of β_j, we estimate a sample participation probit to obtain $\hat{\gamma}_j$, compute $\hat{\lambda}_{ij}$, and include it as an additional regressor in the wage function, which is then estimated by ordinary least squares:

$$(4) \quad \ln W_{ij} = X_{ij}\beta_j + \sigma_{12j}\hat{\lambda}_{ij} + v_{ij},$$

where $v_{ij} \sim N(0, \sum_j)$.

The variables in the reduced-form probit equation are defined in Table 1, and their mean values are given in Table 2. In addition to the variables in the wage equation, the probit includes marital status, certain determinants of the spouse's wage if married, number and ages of family members, exogenous family income, and the maximum AFDC payment that would be available to the family if it had no other income.

The estimated probit coefficients, reported in Table 3, look reasonable. Age and health are the only consistently significant determinants of being a wage or salary earner. Education, welfare, exogenous income, marital status, and spouse's age and education also have the expected effect, either positive or negative, in all but 5 out of the 49 instances (assuming that the effect of the spouse's wage on a person's labor supply is negative).

For the wage equation itself, as indicated above, we computed the average hourly wage rate as total wage and salary earnings in 1975, divided by the product of total weeks worked and usual hours worked in those weeks. To allow for differences in wages due to price-level variation across the country, we divided each person's hourly earnings by a cost-of-living index for his place of residence.[4] The dependent variable for the estimated wage equation was the natural logarithm of "real" hourly earnings, "real" in this case meaning adjusted in that manner for the cost of living. This is equivalent to entering the natural logarithm of the cost index as an explanatory variable, and constraining its coefficient to equal one. This adjustment eliminated 7% of the original wage differential between Mexican and white non-Hispanic males, but widened the differential for Puerto Ricans, who tend to live in the high-cost Northeast.

As explanatory variables we used educational attainment, years of education obtained abroad, potential work experience (i.e., age minus preschool and school years), military experience, health status, and com-

Table 1

Definitions of Variables Used in the Analyses

Variable	Definition
WAGE (W)	Hourly wage rate, calculated as annual earnings/(weeks worked x usual hours worked per week) in 1975.
LNWAGE (lnW)	Natural logarithm of WAGE.
LNCOST (lnP)	Natural logarithm of BLS cost index for moderate family budget in SMSA or region of residence. If SMSA of residence was not in the BLS sample, another SMSA in the same state or region was used. If residence was not identified as being in an SMSA, the BLS index for nonmetropolitan areas in the region was used.
LNRWAGE ln(W/P)	LNWAGE minus LNCOST.
ED	Highest grade of school completed.
FORED	Years attended school abroad (= 0 if born in U.S. mainland).
AGE	Age, in years.
AGESQ	Square of AGE.
EXP	Potential work experience; age minus highest grade attended minus 5.
EXPSQ	Square of EXP.
USEXP	Years of potential work experience in U.S.: if born in U.S. mainland, age minus highest grade attended minus 5; if born outside U.S. mainland, estimated time in U.S. (using midpoint of immigration period) or age minus highest grade attended minus 5, whichever is smaller.
USEXPSQ	Square of USEXP.

(table continues)

Table 1 (cont.)

Definitions of Variables Used in the Analyses

Variable	Definition
FOREXP	Years of potential work experience before immigrating to U.S.: age minus highest grade attended minus 5 minus USEXP.
FOREXPSQ	Square of FOREXP.
VET	= 1 if veteran; 0 otherwise (men only).
MAR	= 1 if married, spouse present; 0 otherwise (women only).
KIDSLT6	No. of children under age 6.
KIDS611	No. of children aged 6-11.
KIDS1217	No. of children aged 12-17.
FAM1864	No. of family members aged 18-64.
FAM65	No. of family members aged 65 or more.
FBORN	= 1 if born outside U.S. mainland; 0 otherwise.
US06	No. of years since immigrated to U.S., 1970 or after (= 0 if born in U.S. or immigrated before 1970).
US46	= 1 if immigrated to U.S. 1970-72; 0 otherwise.
US711	= 1 if immigrated to U.S. 1965-69; 0 otherwise.
US1216	= 1 if immigrated to U.S. 1960-64; 0 otherwise.
US1726	= 1 if immigrated to U.S. 1950-59; 0 otherwise.
US2799	= 1 if immigrated to U.S. before 1950; 0 otherwise.
ENGNVG	= 1 if does not speak and understand English very well; 0 otherwise.
HEALTH	= 1 if health limits ability to work; 0 otherwise.

(table continues)

Table 1 (cont.)

Definitions of Variables Used in the Analyses

Variable	Definition
GOVT	= 1 if government employee; 0 otherwise.
NONWHT	= 1 if race is nonwhite; 0 otherwise.
PROPHIS	percentage Hispanic of population in state of residence.
$\hat{\lambda}$	Inverse of Mill's ratio, predicted from reduced-form probit equation for being in wage sample.
INCOME	Exogenous family income: dividends, interest, rents, pensions, child support, and other non-earnings-conditioned transfers; other family members' unemployment insurance, workmen's compensation, and veterans' benefits; earnings of family members other than self and spouse. Measured in $000's.
WELF	Maximum AFDC payment available to family if no other income (depends on state of residence, whether a male head is present, and number of children under age 18). Measured in $000's.
SPED	Spouse's highest grade of school completed (= 0 if MAR = 0).
SPAGE	Spouse's age, in years (= 0 if MAR = 0).
SPAGESQ	Square of SPAGE (= 0 if MAR = 0).
SPFBORN	= 1 if spouse born outside U.S. mainland; 0 otherwise (= 0 if MAR = 0).
INSAMPLE	= 1 if in sample for wage equation: employed in 1975, civilian, no self-employment income, not enrolled in school (or worked over 1250 hours if enrolled), $\$.10 < W/P < \$50$ for Hispanics, $\$.10 < W/P < \$100$ for white non-Hispanics; = 0 if not in wage sample.

Table 2

Means of Variables: Men in Probit Samples

Variable	White Non-Hispanics	Mexicans	Puerto Ricans	Cubans	Central & South Americans	Other Hispanics	Black Non-Hispanics
INSAMPLE	.563	.622	.598	.602	.719	.566	.545
ED (grade)	11.75	9.34	9.31	10.72	11.57	10.30	9.88
FORED x FBORN (educ. years outside U.S.)	.177	1.09	4.39	7.89	8.86	.964	.138
AGE (years)	40.61	33.45	34.66	40.46	35.25	38.11	37.12
AGESQ	2008.5	1371.55	1426.65	1928.08	1392.82	1807.85	1723.9
FBORN	.032	.246	.707	.932	.930	.126	.015
US06 x FBORN (years)	.010	.241	.469	1.02	1.54	.122	.029
US711 x FBORN	.002	.037	.086	.278	.228	.031	.004
US1216 x FBORN	.001	.029	.086	.289	.145	.024	.002
US1726 x FBORN	.009	.048	.290	.098	.097	.011	.001
US2799 x FBORN	.018	.057	.110	.041	.035	.030	.001
ENGNVG	.009	.288	.411	.530	.487	.212	.002
NONWHT	0	.022	.114	.041	.154	.047	1.0
HEALTH	.154	.130	.173	.124	.075	.163	.191
VET	.394	.246	.190	.083	.066	.317	.273

(table continues)

Table 2 (cont.)

Means of Variables: Men in Probit Samples

Variable	White Non-Hispanics	Mexicans	Puerto Ricans	Cubans	Central & South Americans	Other Hispanics	Black Non-Hispanics
PROPHIS (%)	3.38	15.45	5.42	6.18	6.66	18.51	3.26
MAR	.649	.582	.638	.658	.614	.590	.477
KIDSLT6 (number)	.215	.466	.385	.218	.425	.242	.235
KIDS611 (number)	.312	.601	.510	.338	.390	.458	.457
KIDS1217 (number)	.568	.937	.794	.695	.368	.823	.859
FAM1864 (number)	2.06	2.33	2.13	2.28	2.06	2.24	2.25
FAM65 (number)	.261	.118	.101	.274	.088	.232	.225
INCOME ($000's)	5.840	4.317	2.963	4.970	2.992	4.921	4.533
WELF ($000's)	.093	.107	.172	.038	.133	.064	.095
SPED x MAR (grade)	7.76	5.31	5.85	7.00	6.77	6.30	5.17
SPAGE x MAR (years)	28.33	21.10	22.88	27.45	20.94	24.52	20.16
SPAGESQ x MAR	1395.6	870.90	922.59	1262.43	768.30	1149.13	957.11
SPFBORN x MAR	.031	.131	.450	.568	.474	.070	.010

Note: See Table 1 for definitions of variables. Data base is 1976 SIE. Unless otherwise indicated, means reflect fractions.

Table 3

Estimated Coefficients of Reduced-Form Probit Equations for the Probability of a Man's Being in the Wage Earner Sample

Variable	White Non-Hispanics	Mexicans	Puerto Ricans	Cubans	Central & South Americans	Other Hispanics	Black Non-Hispanics
Constant	-2.68*	-2.84*	-3.02*	-3.27*	-3.10	-3.00*	-3.89*
	(.201)	(.267)	(.724)	(1.20)	(1.61)	(.482)	(.210)
ED	.023*	-.020	.020	.066	-.024	.012	.027
	(.0078)	(.011)	(.030)	(.043)	(.055)	(.020)	(.0085)
FORED x FBORN	.018	.029	.021	-.042	.0083	-.015	.010
	(.027)	(.018)	(.025)	(.036)	(.046)	(.036)	(.053)
AGE	.146*	.188*	.157*	.143*	.257*	.179*	.204*
	(.010)	(.014)	(.038)	(.050)	(.072)	(.025)	(.010)
AGESQ	-.0017*	-.0021*	-.0016*	-.0014*	-.0029*	-.0020*	-.0022*
	(.0001)	(.0002)	(.0005)	(.0005)	(.0009)	(.0003)	(.0001)
FBORN	-1.85*	-.431	-.562	-.556	-1.82*	.022	-1.14
	(.797)	(.226)	(.453)	(.758)	(.860)	(1.02)	(.839)
US06 x FBORN	.497*	.150*	.187*	.122	.215*	-.027	.245
	(.216)	(.054)	(.093)	(.124)	(.091)	(.210)	(.155)
US711 x FBORN	2.07*	.692*	.712	.699	.690	.013	1.10
	(.886)	(.257)	(.437)	(.624)	(.460)	(.973)	(.752)
US1216 x FBORN	1.42	.293	.902*	.778	.505	-.678	.815
	(.942)	(.263)	(.438)	(.615)	(.497)	(.977)	(.884)
US1726 x FBORN	1.86*	.354	.930*	1.64*	1.28*	-.702	1.31
	(.782)	(.239)	(.409)	(.739)	(.627)	(1.03)	(1.03)

(table continues)

Table 3 (cont.)

Estimated Coefficients of Reduced-Form Probit Equations for the Probability of a Man's Being in the Wage Earner Sample

Variable	White Non-Hispanics	Mexicans	Puerto Ricans	Cubans	Central & South Americans	Other Hispanics	Black Non-Hispanics
US2799 x FBORN	1.77*	.361	.655	1.19	2.39*	-.128	-.140
	(.776)	(.249)	(.459)	(.803)	(1.02)	(1.02)	(1.09)
ENGNVG	-.066	.069	.330	.037	-.083	-.036	-.028
	(.282)	(.089)	(.197)	(.262)	(.280)	(.157)	(.544)
NONWHT	—	-.120	-.590*	.637	-.321	.435	—
		(.182)	(.220)	(.520)	(.329)	(.272)	
HEALTH	-.505*	-.760*	-1.51*	-1.15*	-.962*	-.883*	-.916*
	(.057)	(.086)	(.200)	(.230)	(.455)	(.142)	(.063)
VET	.128*	.077	.453*	.447	.914	.248*	.111
	(.046)	(.075)	(.198)	(.441)	(.733)	(.128)	(.060)
PROPHIS	.0001	-.0061*	-.020	-.0070	-.0009	-.0038	.0047
	(.0036)	(.0029)	(.017)	(.028)	(.020)	(.0038)	(.0046)
MAR	2.22*	2.27*	1.81	1.46	.798	1.01	2.32*
	(.310)	(.391)	(1.03)	(1.43)	(2.16)	(.767)	(.377)
KIDSLT6	-.086*	.108*	.373*	-.118	.352	.197	-.060
	(.044)	(.046)	(.125)	(.200)	(.233)	(.110)	(.049)
KIDS611	-.067*	-.035	-.123	-.129	-.219	.013	.014
	(.033)	(.036)	(.090)	(.158)	(.222)	(.073)	(.034)
KIDS1217	-.156*	-.109*	-.111	-.071	-.077	-.153*	-.161*
	(.026)	(.028)	(.083)	(.114)	(.221)	(.050)	(.026)

(table continues)

Table 3 (cont.)

Estimated Coefficients of Reduced-Form Probit Equations for the Probability of a Man's Being in the Wage Earner Sample

Variable	White Non-Hispanics	Mexicans	Puerto Ricans	Cubans	Central & South Americans	Other Hispanics	Black Non-Hispanics
FAM1864	.110*	.099*	.045	.149	.276	.100	.118*
	(.027)	(.031)	(.109)	(.137)	(.337)	(.058)	(.025)
FAM65	-.061	-.170	-.830*	-.267	-.807	.045	-.126*
	(.056)	(.102)	(.312)	(.242)	(.577)	(.143)	(.061)
INCOME ($000's)	-.021*	-.023*	.0018	-.0080	-.067*	-.021*	-.023*
	(.0030)	(.0059)	(.017)	(.020)	(.032)	(.0092)	(.0045)
WELF ($000's)	.384*	-.318	-.553	-.857	.706	-.752	-.017
	(.156)	(.202)	(.437)	(.890)	(.906)	(.428)	(.188)
SPED x MAR	-.040*	-.040*	-.013	-.026	-.0002	-.0048	-.037*
	(.011)	(.013)	(.031)	(.042)	(.054)	(.026)	(.013)
SPAGE x MAR	-.076*	-.075*	-.069	-.047	-.110	-.037	-.079*
	(.015)	(.021)	(.056)	(.071)	(.125)	(.038)	(.017)
SPAGESQ x MAR	.0007*	.0007*	.0008*	.0004	.0018	.0003	.0008*
	(.0002)	(.0003)	(.0007)	(.0008)	(.0017)	(.0004)	(.0002)
SPFBORN x MAR	-.260*	-.157	-.552*	.088	.262	.362	-.580*
	(.131)	(.102)	(.221)	(.381)	(.428)	(.246)	(.238)
No. of Observations	5,168	2,859	525	266	228	923	4,050
Max log likelihood	-2765.33	-1324.19	-222.47	-130.77	-90.92	-424.21	-1863.22

Note: Dependent variable is INSAMPLE for wage equation. Standard errors are in parentheses. Variables are defined in Table 1.

*Statistically significant at the 5% level.

mand of English. Because much of a person's human capital is country-specific, we also controlled for nativity and length of time in the United States.

In addition to the human capital variables, we included variables for government employment and for race. If, as Sharon Smith (1977) has found, government employees earn more than private-sector workers with the same human capital, and if one ethnic group has greater access to government jobs than another, this will affect the relative average wage. We would like to be able to distinguish this effect. Since we know blacks suffer from discrimination, and some Hispanics are black, we would like to know how much of the Hispanics' lower average wage is due to race, and how much discrimination affects Hispanics who are white. We did not control for urban vs. rural location because this information was suppressed in a great many cases by Census procedures to preserve confidentiality. Insofar as location is known, the effect of urban residence, as well as region, on the wage rate is captured by the cost-of-living adjustment. The explanatory variables are defined in Table 1, and their mean values for the wage earners in each ethnic group are in Table 4.

AVERAGE WAGE-RELATED CHARACTERISTICS

The mean values of the variables in Table 4 reveal a number of ways in which Hispanics are disadvantaged by possessing less "human capital" on average than white non-Hispanic men. Average education levels are around 12.5 years for white non-Hispanic male wage earners and 10.5 years for blacks, yet are less than tenth grade for Mexicans and Puerto Ricans.

Table 4

Means of Variables for Men in the Sample of Wage Earners

Variable	White Non-Hispanics	Mexicans	Puerto Ricans	Cubans	Central & South Americans	Other Hispanics	Black Non-Hispanics
WAGE (W) (dollars/hr)	5.97	4.31	4.52	5.33	4.94	5.20	4.65
LNWAGE (lnW)	1.607	1.303	1.389	1.515	1.397	1.466	1.374
LNCOST (lnP)	-.025	-.068	.074	-.015	.051	-.043	-.028
LNRWAGE (lnW/P)	1.632	1.371	1.316	1.530	1.346	1.509	1.402
ED (grade)	12.41	9.44	9.75	11.32	11.79	11.04	10.54
EXP (years)	20.77	19.51	20.45	24.12	19.05	21.33	22.96
EXPSQ	669.08	597.75	602.54	788.37	487.16	693.76	788.59
VET	.486	.304	.255	.112	.085	.427	.374
FBORN	.028	.269	.793	.950	.921	.119	.015
FBORN x FORED (educ. years outside U.S.)	.192	1.31	5.25	8.64	9.23	1.04	.149
FBORN x US46	.0024	.040	.073	.125	.262	.019	.0059
FBORN x US711	.0031	.048	.086	.250	.220	.040	.0041
FBORN x US1216	.0010	.029	.102	.331	.134	.023	.0018
FBORN x US1726	.010	.059	.350	.150	.116	.010	.0014

(table continues)

Table 4 (cont.)

Means of Variables for Men in the Sample of Wage Earners

Variable	White Non-Hispanics	Mexicans	Puerto Ricans	Cubans	Central & South Americans	Other Hispanics	Black Non-Hispanics
FBORN x US2799	.010	.045	.115	.056	.037	.015	.0005
ENGNVG	.0076	.321	.446	.538	.482	.186	.0018
HEALTH	.101	.092	.076	.056	.055	.090	.120
GOVT	.169	.177	.150	.081	.104	.226	.240
NONWHT	0	.022	.086	.056	.116	.052	1.0
$\hat{\lambda}$	.536	.416	.395	.461	.309	.454	.472
Selection Bias $(\hat{\sigma}_{12}\hat{\lambda})$	-.198	-.163	-.084	-.134	.015	-.113	-.202
ED x FBORN (grade)	.329	1.93	7.38	10.73	10.80	1.19	.174
USEXP (years)	20.56	16.74	15.50	12.19	9.72	20.07	22.79
USEXP x FBORN (years)	.574	3.64	12.02	11.04	8.20	1.51	.125
FOREXP x FBORN (years)	.208	2.77	4.94	11.92	9.33	1.25	.168
USEXPSQ	656.49	474.24	365.76	244.24	169.35	641.10	782.67
USEXPSQ x FBORN	17.79	90.80	264.10	196.42	126.95	32.50	1.63
FOREXPSQ x FBORN	4.18	60.71	91.38	293.52	191.01	27.95	3.56
PROPHIS (%)	3.40	14.89	5.22	6.12	6.68	17.11	3.41

Note: Variables are defined in Table 1. Unless otherwise indicated, means reflect fractions.

The other three Hispanic groups average between 11 and 12 grades of school. The Mexicans and Puerto Ricans are younger (see EXP) than the other groups on average, and the Cubans are even older than white non-Hispanics. Almost all of the Cubans and Central and South Americans are foreign-born, and members of the latter group arrived in the United States even more recently than the Cubans. Eighty percent of the Puerto Ricans were born on the island. Almost 75% of the Mexicans, on the other hand, were born in the United States. The "other Hispanics" are overwhelmingly (90%) from the second or later generations in the United States. This group includes persons of mixed Hispanic ancestry as well as those who did not identify with any of the listed Hispanic groups.

Not surprisingly, the percentages of each group who are fluent in English (the complement of ENGNVG) and who have been in the Armed Forces reflect the percentages born in the United States. Government employment also tends to reflect birthplace, except that Mexican and Puerto Rican men are about as likely as white non-Hispanics to hold government jobs, while blacks and "other Hispanics" are much more likely to do so.

PARAMETERS OF THE WAGE FUNCTIONS

The estimated wage equations, corrected for selectivity bias, are reported in Table 5. The coefficient of $\hat{\lambda}$, which represents the covariance between the errors in the sample participation probit and the wage equation, is negative for all groups except the Central and South Americans. It is significantly negative for the largest samples of men--whites, blacks, Mexicans, and "other Hispanics." Apparently people in these ethnic groups who have unusually high market wage offers, given

Table 5

Coefficients of Wage Equations for Men, Corrected for Sample Selection Bias: Effect of Variables on Average Wage Offer

Variable	White Non-Hispanics	Mexicans	Puerto Ricans	Cubans	Central & South Americans	Other Hispanics	Black Non-Hispanics
Intercept	.618* (.077)	.764* (.091)	.837* (.227)	1.035* (.462)	.290 (.402)	.893* (.175)	.850* (.090)
ED	.061* (.0041)	.054* (.0053)	.036* (.013)	.035 (.019)	.050* (.022)	.034* (.010)	.049* (.0046)
EXP	.041* (.0033)	.024* (.0041)	.038* (.0082)	.040* (.015)	.039 (.020)	.029* (.0078)	.015* (.0038)
EXPSQ	-.0006* (.0001)	-.0003* (.0001)	-.0006* (.0002)	-.0007* (.0003)	-.0006 (.0004)	-.0004* (.0001)	-.0002* (.0001)
VET	-.0080 (.024)	.029 (.034)	-.0015 (.068)	.210 (.144)	.219 (.214)	.044 (.060)	.022 (.026)
FBORN	-.195 (.355)	-.258* (.082)	-.157 (.152)	-.167 (.300)	-.411 (.322)	.277 (.324)	.415 (.413)
FBORN x FORED	.0006 (.014)	-.0056 (.0077)	-.0048 (.0086)	-.0067 (.016)	.019 (.018)	-.0092 (.022)	-.036 (.028)
FBORN x US46	.036 (.394)	.229* (.087)	.025 (.141)	-.031 (.227)	.245 (.161)	-.307 (.289)	-.184 (.327)
FBORN x US711	.088 (.379)	.129 (.086)	.086 (.138)	-.0030 (.220)	.244 (.156)	-.364 (.260)	-.124 (.344)
FBORN x US1216	.104 (.468)	.191 (.098)	.044 (.135)	.147 (.226)	.275 (.190)	.125 (.281)	.231 (.395)

(table continues)

Table 5 (cont.)

Coefficients of Wage Equations for Men, Corrected for Sample Selection Bias: Effect of Variables on Average Wage Offer

Variable	White Non-Hispanics	Mexicans	Puerto Ricans	Cubans	Central & South Americans	Other Hispanics	Black Non-Hispanics
FBORN x US1726	.029 (.348)	.284* (.085)	.027 (.125)	.063 (.268)	.479* (.214)	-.191 (.343)	.039 (.427)
FBORN x US2799	.186 (.350)	.220* (.097)	.160 (.152)	.108 (.292)	.313 (.362)	-.394 (.337)	-.187 (.595)
ENGNVG	-.068 (.153)	-.048 (.039)	-.203* (.072)	-.159 (.098)	-.097 (.121)	-.184* (.080)	.487 (.282)
HEALTH	-.011 (.039)	-.017 (.051)	.214 (.133)	.124 (.216)	.152 (.238)	.011 (.105)	.114* (.045)
GOVT	-.014 (.027)	-.033 (.033)	-.023 (.074)	.011 (.143)	.121 (.164)	.064 (.060)	.070* (.025)
NONWHT	—	-.089 (.089)	.120 (.095)	-.153 (.183)	.011 (.151)	-.064 (.114)	—
$\hat{\lambda}$	-.369* (.058)	-.390* (.063)	-.212 (.120)	-.291 (.247)	.050 (.254)	-.250* (.118)	-.428* (.057)
N	2,911	1,778	314	160	164	522	2,209
R^2	.261	.227	.262	.320	.248	.210	.228
$(\hat{\sigma}_{11})^{1/2}$ (Corrected)	.591	.579	.448	.494	.582	.561	.575

Note: Dependent variable is LNRWAGE. Corrected standard errors are in parentheses. Variables are defined in Table 1.

*Statistically significant at the 5% level.

their measured characteristics, have even higher productivity in other sectors and so are less likely to be in the wage sample.[5]

Our significantly negative estimates of σ_{12} (the coefficient of λ) are not simply a result of the broad age range (everyone over age 13) included in the samples we analyzed. When we estimated the same model for Mexican men aged 25 through 59, the coefficient of $\hat{\lambda}$ was also significantly negative, even though the sample participation rate was much higher (81% rather than 62%). This illustrates the point that there is no necessary connection between the sample participation rate and the correlation between the stochastic terms in the wage and the participation equations. A 50% sample may be randomly selected, while a 90% sample may systematically exclude the highest 10% of wage offers. Thus, choosing an age group with a high wage and salary-sector participation rate would not eliminate the possibility of selectivity bias (though it might reduce its quantitative impact on the estimated parameters).

When we examine the estimates of the coefficients of the wage-offer functions in Table 5, we find that race (NONWHT) has no significant impact on the wages of Hispanics; black Hispanics suffer from one handicap, not two. The sign on the NONWHT dummy variable is actually positive for Puerto Rican men. Poor health does not depress the wage rate a man is offered; the sign on the health disability dummy is usually positive, significantly so for black men. Black men get 7% more in the public (GOVT) than in the private sector, but public sector wages are not significantly different from wages in the private sector for white or Hispanic men.

The wages of successive cohorts of immigrants, compared with U.S.-born members of their ethnic group, can be plotted using the estimated coefficients of the wage equation. FBORN plus FBORN x FORED tells how a newly arrived immigrant with a given level of schooling fares, compared with the U.S.-born members of his ethnic group who have the same education, age, etc. The dummy variables US46, US711, US1216, US1726, and US2799, when added to (FBORN + FBORN x FORED), tell how immigrants of these cohorts fare, compared with the U.S. natives. We can use as an example an immigrant who has eight years of foreign schooling, which is about average.

White non-Hispanic male immigrants do not catch up with native whites until they have been here at least 27 years. Mexican immigrants with less than a sixth-grade education match U.S.-born Mexicans when they have been here 17 to 26 years, but the cohort that arrived before 1950 earns less than U.S. natives. Island-born Puerto Rican men apparently never catch up, unless they come with no education. Neither do Cubans. The unusual nature of the wave of Cuban political refugees who came in the early 1960s is reflected in their average wage rate, which is higher than that of the Cuban men who arrived before or after them.

Central and South American immigrants with ten years of schooling overtake the few who are U.S. natives in 4 to 6 years. Those who arrive with less schooling take longer to catch up. Blacks and "other Hispanics" show an erratic pattern: new arrivals and those who have been here 12 to 26 years earn more than U.S. natives, but this is not true of those who have been here 4 to 11 years or more than 26 years.

The estimated wage loss from a poor command of English varies across groups, from an insignificant 5% for Mexican men to 18 to 20% for "other Hispanics" and Puerto Ricans. Blacks with poor English apparently earn more than other blacks, but there are so few (four) of them that this may be a coincidence.

All Hispanic groups have lower returns to education than Anglos, ranging from 3.4% per grade for "other Hispanics" to 5.4% for Mexicans. Anglo men earn 6.1% more for each additional grade of school completed. The coefficient of FORED is always virtually zero, indicating that there is no appreciable difference between U.S. and foreign schooling in enhancing earnings capacity.

The initial returns to (potential) work experience are about the same for Puerto Rican, Cuban, Central and South American, and white non-Hispanic men. Mexicans, "other Hispanics," and blacks have flatter experience-wage profiles than the others. For each group we can find the value of EXP that corresponds to the maximum wage on the experience-wage profile. Let the coefficient of EXP be β_1 and the coefficient of EXPSQ be β_2. Then $\partial \ln W/\partial EXP = \beta_1 + 2\beta_2 EXP = 0$ at the maximum point, and $EXP = -\beta_1/2\beta_2$ gives the value of EXP for which the wage is highest. For white non-Hispanics, wages peak 36 years after leaving school; for Mexicans, after 46 years; for blacks and "other Hispanics," after 40 years; for Puerto Ricans, Cubans, and Central and South Americans, after 30 to 32 years. Veterans do not earn significantly more than nonveterans in any ethnic group, which suggests that time spent in the Armed Forces is no more and no less valuable than other types of work experience.

The coefficients of experience and education merit further investigation. Our estimated coefficients of EXP and EXPSQ measure an average of the returns to U.S. work experience for the native-born and the returns to foreign and U.S. work experience for immigrants. The coefficient of

ED averages the return to U.S. schooling across U.S.-born and foreign-born individuals. Chiswick (1978) has found that immigrants have a lower estimated return to education than U.S. natives, and speculates that this is due to a weaker correlation among immigrants between schooling and the omitted variable, ability. We would therefore expect ethnic groups with larger percentages of the foreign-born to have smaller coefficients on EXP and ED.

To disentangle these effects, we estimate another set of wage equations for men. These equations include an interaction term, ED x FBORN, and separate variables measuring potential work experience in the United States (USEXP) and potential work experience abroad (FOREXP), along with quadratic and interaction terms: USEXPSQ, FOREXPSQ, USEXP x FBORN, and USEXPSQ x FBORN.[6] We also include as a variable the percentage Hispanic in the population in the state of residence, to see whether there is any evidence that the wages of Hispanics are depressed by "crowding" in labor markets with many Hispanics. The coefficients, corrected for selectivity bias, are reported in Table 6. (The variable definitions and their mean values are in Tables 1 and 4.)

From the signs of the coefficients, it appears that, except for Cubans and "other Hispanics," the foreign-born have lower returns to their U.S. schooling than the native-born members of their ethnic group. (The return to U.S. schooling for the foreign-born is the sum of the coefficients of ED and ED x FBORN.) However, except for Mexican men, the differences are not precisely enough measured to be sure of the signs. U.S.-born Mexican men have as high a return to schooling as white non-Hispanics, about 6%, and Puerto Rican men born on the mainland get

Table 6

Coefficients of Wage Equations for Men, Including Interaction Terms, Corrected for Sample Selection Bias: Effect of Variables on Average Wage Offer

Variable	White Non-Hispanics	Mexicans	Puerto Ricans	Cubans	Central & South Americans	Other Hispanics	Black Non-Hispanics
Intercept	.622* (.078)	.721* (.095)	.619 (.358)	1.320 (.944)	-1.321 (1.021)	.992* (.173)	.854* (.091)
ED	.061* (.0042)	.062* (.0060)	.049 (.026)	-.025 (.073)	.119 (.068)	.032* (.010)	.050* (.0046)
ED x FBORN	-.0094 (.022)	-.026* (.0093)	-.019 (.028)	.067 (.076)	-.069 (.070)	.015 (.034)	-.029 (.042)
FORED x FBORN	.0048 (.014)	-.0025 (.0078)	-.0028 (.0081)	-.0088 (.016)	.0083 (.016)	-.012 (.028)	-.017 (.041)
FBORN	.019 (.343)	.185 (.125)	.298 (.369)	-.548 (.907)	1.639 (1.061)	-.297 (.393)	.335 (.434)
ENGNVG	-.058 (.174)	-.040 (.039)	-.179* (.072)	-.137 (.096)	-.116 (.113)	-.135 (.081)	.443 (.277)
USEXP	.040* (.0033)	.024* (.0041)	.047* (.014)	.098* (.045)	.122* (.049)	.030* (.0076)	.015* (.0038)
USEXP x FBORN	-.0012 (.018)	.013* (.0064)	-.019 (.016)	-.050 (.046)	-.065 (.051)	.023 (.027)	.042 (.056)
FOREXP x FBORN	.016 (.017)	-.0021 (.0055)	-.0034 (.0097)	.014 (.011)	-.0002 (.017)	.027 (.019)	-.0014 (.025)
USEXPSQ	-.0006* (.0001)	-.0002* (.0001)	-.0007* (.0003)	-.0017* (.0009)	-.0019 (.0013)	-.0004* (.0001)	-.0002* (.0001)

(table continues)

Table 6 (cont.)

Coefficients of Wage Equations for Men, Including Interaction Terms, Corrected for Sample Selection Bias: Effect of Variables on Average Wage Offer

Variable	White Non-Hispanics	Mexicans	Puerto Ricans	Cubans	Central & South Americans	Other Hispanics	Black Non-Hispanics
USEXPSQ x FBORN	-.0000	-.0004*	.0003	.0007	.0007	-.0007	-.0013
	(.0004)	(.0001)	(.0004)	(.0009)	(.0013)	(.0006)	(.0022)
FOREXPSQ x FBORN	-.0004	.0001	.0001	-.0003	.0002	-.0005	.0002
	(.0005)	(.0001)	(.0003)	(.0003)	(.0005)	(.0004)	(.0007)
VET	-.0061	.015	.0003	.205	-.086	.033	.022
	(.025)	(.034)	(.067)	(.149)	(.240)	(.059)	(.026)
HEALTH	-.0079	-.020	.187	.101	.236	-.043	.117*
	(.039)	(.051)	(.134)	(.197)	(.237)	(.104)	(.045)
GOVT	-.041	-.032	-.019	-.0075	.087	.086	.070*
	(.027)	(.033)	(.074)	(.142)	(.157)	(.060)	(.025)
NONWHT	—	-.104	.109	-.126	.011	-.130	—
		(.091)	(.096)	(.175)	(.147)	(.113)	
PROPHIS	.0021	-.0039*	-.0079	.016	.0032	-.0060*	-.0011
	(.0020)	(.0013)	(.0068)	(.012)	(.0084)	(.0017)	(.0022)
$\hat{\lambda}$	-.378*	-.394*	-.195	-.253	-.064	-.194	-.432*
	(.058)	(.057)	(.117)	(.203)	(.215)	(.114)	(.058)
N	2,911	1,778	314	160	164	522	2,209
R^2	.261	.236	.256	.338	.293	.216	.228
$(\hat{\sigma}_{11})^{1/2}$ (Corrected)	.594	.577	.447	.480	.565	.549	.577

Note: Dependent variable is LNRWAGE. Corrected standard errors are in parentheses. Variables are defined in Table 1.

*Statistically significant at the 5% level.

the same return as U.S.-born blacks, about 5%. Those born in Mexico have a 3.6% return per grade of U.S. schooling, and those born in Puerto Rico have a 3.0% return, while foreign-born white non-Hispanics have 5.2% and foreign-born blacks have 2.0%. For Central and South Americans, the return to U.S. schooling is 5% for those born abroad and 12% for the very few born in the United States. The latter estimate is not at all precise, however.

Foreign-born Cubans seem to have a higher rate of return to U.S. schooling (4.1%) than those born in the United States. The latter group's estimated coefficient on ED is negative, but there are only eight of them in the sample, so this may be a coincidence. "Other Hispanics" also have a higher rate of return to U.S. schooling if they were born abroad—4.8% as opposed to 3.2% for those who were born in the United States.

The returns to foreign work experience are much smaller than the returns to work experience in the United States. In fact, Mexican, Puerto Rican, Central and South American, and black immigrants gain virtually nothing in wage rates from prior work experience. In this sense an immigrant in one of these groups, no matter how old, resembles a new entrant to the U.S. labor force who has just finished school. On the other hand, Cuban, "other Hispanic," and white non-Hispanic immigrants do start out in the United States with higher wages the older they are on arrival. Their foreign work experience is worth only 1 or 2% per year, however—much less than experience in the United States.

There is also a difference between immigrants and U.S. natives in returns to work experience acquired in the United States. Mexican, "other Hispanic," and black immigrants have higher initial returns to U.S. work experience than their native-born counterparts. Their experience-wage profiles also peak much more quickly, as shown in Table 7. This indicates a relatively brief, intense period of investment in human capital after entering the U.S. labor force, as we might expect of adult immigrants adapting to a new country. However, Puerto Rican, Cuban, and Central and South American immigrants have lower initial returns to U.S. work experience than those born on the mainland United States. The Puerto Rican migrants' investment period lasts as long as that of mainland natives, but the Cuban and Central and South American immigrants' investment period is shorter.

Earlier, we presented some estimates of how long it takes before immigrants' wages match the wages of native-born members of their ethnic group of the same age, education, and other personal characteristics. These estimates were derived from the wage equations that included dummy variables for the year of immigration. We can obtain another set of estimates from the wage equations that include USEXP and FOREXP as continuous variables. The answer depends on the amount and location of the immigrant's education and his age when he arrived in the United States. For specified values of these variables, we use the coefficient estimates to derive the appropriate expressions for the wages of a U.S. native and an immigrant who are alike in other respects; set these expressions equal to one another; and solve for the value of the immigrant's USEXP that satisfies the equation. (Note that, for people of the same age and education, the U.S. native's USEXP is equal to the immigrant's USEXP plus his FOREXP.)

Table 7

Value (in Years) of USEXP at Peak of the U.S. Experience-Wage Offer Profile: Native-Born and Foreign-Born Men

Ethnic Group	U.S. Natives	Foreign-Born
White Non-Hispanics	35.7	32.7
Mexicans	51.3	31.1
Puerto Ricans	32.3	33.5
Cubans	28.6	24.9
Central & South Americans	31.4	23.1
Other Hispanics	38.2	25.3
Black Non-Hispanics	40.4	19.0

Note: Value of USEXP derived from estimated wage equations in Table 6 by setting $\partial LNRWAGE/\partial USEXP = 0$ and solving for USEXP.

If we compare an immigrant who arrives at age 20 having an eighth-grade education (i.e., FORED = 8 and FOREXP = 7) with a U.S. native having an eighth-grade education, the "catch-up" period is 4 years for blacks, 18 for "other Hispanics," 34 for whites, 42 for Puerto Ricans, and 51 for Cubans. Mexicans never catch up. Central and South American immigrants start out earning more than the native-born, but the gap narrows the longer they stay. These results are reasonably consistent with our earlier estimates.

Coefficients in Table 6 for PROPHIS tell us that in states where Hispanics constitute larger fractions of the population, white and Cuban men earn at least as much as they earn elsewhere; but Mexican, Puerto Rican, and "other Hispanic" men have lower wages than elsewhere. Moreover, the negative effect is significant for Mexicans and "other Hispanics." This may be evidence that discrimination affects Hispanics more when they are a large proportion of the labor force, as in the Southwest. It may also represent a "compensating differential," which could arise if Mexicans and "other Hispanics" prefer to live and work where there are many other Hispanics, regardless of lower wages.

DECOMPOSITION OF WAGE DIFFERENTIALS

We can use the estimated wage equations to sort out how much of the observed minority-Anglo wage differential is due to differences in average wage offers, and how much is due to differences in selection bias of the type discussed at the beginning of this paper. Further, we can break down the wage-offer differential into the parts due to differences in average personal characteristics and in parameters. The part due to differences in parameters is often attributed to discrimination.

Define $\overline{X}_j = \sum_{i=1}^{n_j} X_{ij}/n_j$, $\overline{\lambda}_j = \sum_{i=1}^{n_j} \hat{\lambda}_{ij}/n_j$, and $\overline{\ln W}_j = \sum_{i=1}^{n_j} (\ln W_{ij})/n_j = \ln \tilde{W}_j$, where n_j is the number of persons with observed wages in group j and $\tilde{W}_j$ is the geometric mean of the observed wage rate for group j. (X_{ij}, $\overline{\lambda}_{ij}$, and $\ln W_{ij}$ are defined above.)

Then $\overline{\ln W}_j = \overline{X}_j \beta_j + \sigma_{12j} \overline{\lambda}_j$,

and

$$(5) \qquad \overline{\ln W}_H - \overline{\ln W}_L = (\overline{X}_H \beta_H - \overline{X}_L \beta_L) + (\sigma_{12H} \overline{\lambda}_H - \sigma_{12L} \overline{\lambda}_L),$$

where the subscript H refers to the high-wage group, and the subscript L refers to the low-wage group. This shows that the observed wage differential, $\overline{\ln W}_H - \overline{\ln W}_L$, equals the difference of mean wage offers, $\overline{X}_H \beta_H - \overline{X}_L \beta_L$, plus the difference in average selectivity bias, $\sigma_{12H} \overline{\lambda}_H - \sigma_{12L} \overline{\lambda}_L$ or $E(\varepsilon_{1H} \mid \text{in observed sample}) - E(\varepsilon_{1L} \mid \text{in observed sample})$.

We can proceed to decompose the offered-wage differential in the spirit of Oaxaca (1973), giving:

$$(6) \qquad \overline{\ln W}_H - \overline{\ln W}_L = (\overline{X}_H - \overline{X}_L)\left[D\beta_H + (I - D)\beta_L\right] + \left[\overline{X}_H (I - D) + \overline{X}_L D\right](\beta_H - \beta_L) + (\sigma_{12H} \overline{\lambda}_H - \sigma_{12L} \overline{\lambda}_L),$$

where I is the identity matrix and D is a diagonal matrix of weights.

Since $\overline{\ln W}_H - \overline{\ln W}_L = \ln(\tilde{W}_H/\tilde{W}_L) \approx (\tilde{W}_H - \tilde{W}_L)/\tilde{W}_H$, equation (6) decomposes the percentage difference between the geometric means of the observed wage rates for the two groups into a part due to selectivity bias, a part attributable to differences between the groups' average values of each characteristic, and a part attributable to differences between the parameters of the wage-offer function. The first term on the right-hand side of Eq. (6) can be interpreted as the wage difference that would exist in the absence of discrimination, if both groups had the same wage-offer function. The second term is then an estimate of the wage-offer difference due to discrimination.

We will in general get different estimates of discrimination depending upon the choice of the matrix D of weights. This choice amounts to an assumption about what the wage-offer function would be in a nondiscriminatory world. For example, setting D = I (a procedure followed by many analysts of earnings differentials) assumes that the majority group's wage-offer function would prevail; whereas D = 0 assumes that the minority group's wage-offer function would apply to everyone, in the absence of discrimination. Neither assumption seems warranted, since employers' preferences for the majority and their distaste for the minority probably distort both groups' wages. Having no way of knowing the true weights, we choose D = (1/2)I. This assumes that the no-discrimination wage-offer parameters would lie halfway between the ones currently estimated for the majority and minority groups. To show how sensitive the estimates of discrimination are to the choice of weights, in Table 8 we report these estimates for D = I and D = 0, as well as for D = (1/2)I. In addition, we show in Table 8 the observed wage differential and the estimated wage-offer differential between white non-Hispanics and each minority group.

Table 8 shows that the difference in average wage offers between Hispanic and white non-Hispanic men is always larger than the observed wage differential. For blacks, the wage-offer differential is the same

Table 8

Wage Differences between White Non-Hispanic and Minority Men, and Estimated Effect of Discrimination

Ethnic Group	(1) Observed Wage Difference[a]	(2) Wage Difference, Corrected for Selection Bias[b]	(3) Wage Difference due to Difference in Parameters[c]	(4)	(5)
			(D = I)[d]	(D = 0)[e]	(D = (1/2)I)[f]
Mexicans	.304	.339	.051	.076	.064
Puerto Ricans	.218	.332	.177	.177	.177
Cubans	.092	.156	.024	-.147	-.062
Central & South Americans	.210	.423	.350	.380	.365
Other Hispanics	.141	.225	.106	.133	.119
Non-Hispanic Blacks	.233	.229	.132	.142	.137

[a] $\overline{\ln W_w} - \overline{\ln W_h}$ (approx. the percentage difference in the geometric mean observed wage between each group and white non-Hispanic men).

[b] $\overline{\ln W_w} - \overline{\ln W_h} - [(\hat{\sigma}_{12}\hat{\lambda})_w - (\sigma_{12}\hat{\lambda})_h] = \overline{\ln P_w} + \overline{X}_w\beta_w - \overline{\ln P_h} - \overline{X}_h\beta_h$ (the "wage-offer" differential).

[c] $[\overline{X}_w(I - D) + \overline{X}_h D]\ (\beta_w - \beta_h)$.

[d] Assuming whites' wage function reflects no discrimination; $\overline{X}_h\ (\beta_w - \beta_h)$.

[e] Assuming minority group's wage function reflects no discrimination; $\overline{X}_w\ (\beta_w - \beta_h)$.

[f] Assuming that the no-discrimination wage function is halfway between that of whites and minority.

size as the observed wage differential. Selectivity bias is negative for all groups except Central and South Americans, but it is larger in absolute value for white men than for Hispanic men. Therefore it reduces the average observed wage more for white men, narrowing the observed wage differences between them and Hispanics.

The average wages offered to minority men are at least 15% below those offered to white non-Hispanics. How serious a problem is labor-market discrimination in producing these differences? Table 8 shows the wage difference that cannot be explained by various differences in group characteristics (age, education, etc.) and which is therefore potentially due to discrimination. Column 3 in that table shows the estimates if the whites' wage function is assumed to be the no-discrimination one; column 4 gives estimates when the minority group's wage function is used; and the last column shows the average of 3 and 4. In most cases, the three estimates are quite similar. Cuban men constitute the only case in which the choice of weights makes a difference of more than two percentage points in the estimate of the wage difference due to discrimination.

If we take the average estimates of discrimination, given in the last column, the largest (36%) describes the case of Central and South American men. This is 86% of the total wage-offer differential between them and white non-Hispanic men. For Puerto Rican men, discrimination may be responsible for as much as an 18% difference in wages, about half of the 33% wage-offer gap. Discrimination may cause a wage gap of up to 12% for "other Hispanic" men, a little over half of the total gap. Black men are in between the Puerto Ricans and "other Hispanics"; the wage-offer difference due to racial discrimination may be as large as 14%, which is 60% of the total black-white male wage-offer differential.

For Mexican men, however, discrimination may result in only a 6% wage difference at most. The rest of the 34% wage-offer gap is due to differences in characteristics such as education. And Cuban men apparently have higher wages compared to white non-Hispanic men than their human capital characteristics would warrant; the difference in parameters of the wage function goes in their favor.

It is possible that discrimination affecting many Hispanics is directed not against Hispanics _per se_, but against blacks, immigrants, and those not fluent in English. Since these groups constitute a larger fraction of the Hispanic ethnic groups than of white non-Hispanics, such discrimination would affect Hispanics' wages disproportionately. We include race as a characteristic in our wage equations in order to distinguish discrimination against Hispanics from discrimination against blacks. Language skills and duration of residence in the United States, as aspects of a worker's human capital stock, are also included in the wage equations. Our decomposition method attributes wage differences due to these factors to differences in personal characteristics, not to discrimination. It is therefore of interest to examine how much of the Hispanic-white wage difference is due to the differences in race, nativity, and language skills. Beyond that, analysis of the portion of the Hispanic-white differential that is due to measured characteristics will tell us how much of the difference comes from differences in education levels, geographic location, government-sector employment, health, and age. In Table 9 we present a detailed decomposition of the geometric mean wage differential between each minority group and white non-Hispanics, assuming the no-discrimination parameters lie halfway between those of the whites and those of the minority group.

Table 9

Decomposition of Wage Differences between White Non-Hispanic and Minority Men: Effect of Discrimination and Effect of Particular Variables

	Mexicans	Puerto Ricans	Cubans	Central & South Americans	Other Hispanics	Black Non-Hispanics
Observed arithmetic wage difference:						
$(\overline{W}_w - \overline{W}_h)/\overline{W}_w$	.278	.243	.107	.173	.129	.221
Observed geometric mean wage difference (Table 8, col. 1):						
$\overline{\ln W_w} - \overline{\ln W_w}$	.304	.218	.092	.210	.141	.233
Difference in selection bias:						
$(\sigma_{12}\hat{\lambda})_w - (\sigma_{12}\hat{\lambda})_h$	−.035 (.041)	−.114 (.057)	−.064 (.118)	−.213 (.084)	−.084 (.062)	.004 (.041)
Wage difference, $\overline{\ln W_w} - \overline{\ln W_h}$, corrected for selection bias[a]	.339	.332	.156	.423	.225	.229
Effect of discrimination (Table 8, col. 5):						
$[(\overline{X}_w + \overline{X}_h)/2]\ (\beta_w - \beta_h)$	.064	.177	−.062	.365	.119	.137
Difference of area price levels:						
$\overline{\ln P_w} - \overline{\ln P_h}$	.043	−.099	−.010	−.076	.018	.003
Total effect of background variables listed below: $(\overline{X}_w - \overline{X}_h)\ (\beta_w + \beta_h)/2$	.233 (.023)	.253 (.044)	.228 (.106)	.134 (.095)	.089 (.015)	.088 (.007)
ED	.171 (.010)	.129 (.018)	.053 (.010)	.034 (.007)	.065 (.008)	.103 (.006)
Total EXP	.011 (.001)	−.027 (.004)	−.062 (.011)	−.039 (.022)	−.008 (.001)	−.015 (.001)
VET	.002 (.004)	−.001 (.008)	.038 (.027)	.042 (.043)	.001 (.002)	.001 (.002)
Total FBORN	.029 (.015)	.101 (.046)	.127 (.113)	.052 (.112)	.005 (.008)	.001 (.003)
ENGNVG	.018 (.025)	.060 (.037)	.060 (.048)	.039 (.046)	.023 (.015)	.001 (.001)
HEALTH	−.0002 (.0003)	.002 (.002)	.003 (.005)	.003 (.006)	.000 (.001)	−.001 (.001)
GOVT	.0002 (.0002)	−.0004 (.001)	−.0001 (.006)	.004 (.005)	−.001 (.002)	−.002 (.001)
NONWHT (B_h)	.002 (.002)	−.010 (.008)	.009 (.010)	−.001 (.018)	.003 (.006)	— —

Note: Standard errors are in parentheses.

[a] $(\overline{X}_w\beta_w + \overline{\ln P_w}) - (\overline{X}_h\beta_h + \overline{\ln P_h})$ = difference in wage offers. See Table 8, col. 2.

In Table 9 we see that subtracting the area price-level difference from the wage-offer differential of 34% between Mexican and white non-Hispanic men would reduce the "real" wage-offer differential between these groups to 30%. Education is the source of half of the 34% wage-offer differential; bringing the Mexicans up to the whites' average schooling level would bring the Mexican men to within 17% of the whites' average wage rate. This would entail an increase from 9.4 to 12.4 grades completed. The difference in average time in the United States accounts for a wage differential of 3%. Improving fluency in English to the level of white non-Hispanics would eliminate only two percentage points of the gap. Differences in potential work experience, Armed Forces experience, health, government employment, and race each account for a wage differential of 1% or less. Discrimination accounts for a difference of 6%. Race, time in the United States, and English together account for another 5% difference.

The wages offered Puerto Rican men (row 4) are 33% less than those offered white non-Hispanics, on average. The observed wage differential is only two-thirds this size, due to selectivity bias. Adjusting for area prices widens the "real" wage-offer gap to 43%, since Puerto Ricans tend to live in the high-priced Northeastern cities. Differing characteristics account for 60% of this gap, leaving a wage-offer differential of 18% that may be due to discrimination. Just closing the education gap of 2.7 years would eliminate a differential of 13%, and improving Puerto Ricans' command of English would take care of 6%. The Puerto Rican-Anglo difference in length of residence on the U.S. mainland accounts for a 10% wage-offer gap. Race and the difference in potential work experience act to narrow the observed wage gap, not to widen it. Nothing else has much impact on the wage differential.

Cuban men fall short of the wages offered white non-Hispanic men by 16% after adjusting for selectivity bias (row 4). If their background characteristics were the same, the differential would be 6% in the Cubans' favor. The Cubans' recent arrival in the United States accounts for a differential of 13%. Improving the Cubans' command of English would eliminate a differential of 6%, and closing the education gap of 1.1 grades would eliminate a wage-offer differential of 5%. The Cubans' lack of U.S. Armed Forces experience (which is related to the recency of their immigration) accounts for a 4% differential. The lower wages of black Cubans accounts for a 1% difference in average wages offered Cuban and white non-Hispanic men. The fact that the Cubans are older on average tends to narrow the wage-offer differential; if they had the same potential experience as white non-Hispanics, the wage-offer differential would be 22% instead of 16%.

Central and South American men have average observed wages that are 21% below those of white non-Hispanic men, and their average wage offers are 42% lower than those of the Anglo men. The price-level adjustment widens the "real wage offer" gap to 50%. A differential of only 13% can be explained by differing personal characteristics of the ethnic groups. In this case, a wage-offer differential as high as 36% may be due to discrimination. A 4% difference is due to lack of fluency in English, and a 4% difference results from lack of U.S. Armed Forces experience. Both of these differentials may be linked to the fact that the Central and South Americans are the most recent Hispanic arrivals in the United

States, even more recent than the Cubans, on average. By itself, this accounts for a 5% wage-offer differential. As they already have nearly as much education as white non-Hispanic men (11.8 grades vs. 12.4 grades), increasing education to the level of the Anglos could only close a wage-offer gap of 3%.

The men of "other Hispanic" origin have average wage offers that are 22% below those of white non-Hispanics, after correcting for selectivity bias. A differential of 12% could be attributed to discrimination. A gap of 7% is due to the difference in education of 1.4 grades, and a gap of 2% is due to poor command of English. Local price differences account for another 2%. Nothing else affects the differential in any important way.

By way of comparison, black and white men have a 23% wage-offer difference, of which less than half can be attributed to differing characteristics, so that as much as a 14% wage-offer differential may be due to discrimination. The education difference of nearly two years explains a wage-offer gap of 10%. No other observable differences contribute in a particularly important way to the wage gap.

SUMMARY OF RESULTS

Our major findings, roughly in order of importance, are as follows.

1. The five major Hispanic-American groups differ so much among themselves and from blacks that it makes little sense to lump them under a single "Hispanic" or "minority" rubric for either analysis or policy treatment.

2. Discrimination in the labor market may be responsible for a wage differential from non-Hispanic white men of 18% for Puerto Rican men, 14% for black men, and 12% for "other Hispanic" men, but only 6% for Mexican men. Low levels of education are apparently a much more serious problem than discrimination for Mexicans. The Cuban-Anglo wage differential can be completely explained by differences in observable personal characteristics, especially recency of arrival in the United States and language handicaps. These factors, along with low education and discrimination, also seriously handicap Puerto Rican men.

3. Mexican and "other Hispanic" men, but not the other minority groups, have significantly lower wages in states where Hispanics are a larger fraction of the population. This may be evidence of "crowding" in a discriminatory environment, or of a preference for locating, despite lower earnings, where there are many other Hispanics.

4. Minority men (except for U.S.-born Mexicans) have lower wage returns to education than Anglos, and foreign work experience is worth much less than experience in the United States; indeed, it is virtually worthless for several groups.

5. However, returns to education do not differ significantly between U.S. natives and immigrants within the same ethnic group (except for Mexicans), nor is the difference between foreign and U.S. schooling significant within a group. U.S.-born Mexican men have as high a return to education as U.S.-born Anglos, while the Mexican-born have a much lower return, as do the other minority groups.

6. There is no clear evidence that Hispanic immigrants' wages ever overtake those of native-born members of their ethnic group who are of the same age, educational level, etc.

7. English deficiencies do not depress the wages of Mexican men as much as the other four Hispanic groups.

8. The wages of white and non-white Hispanics do not differ significantly, *ceteris paribus*.

9. Public-sector wages are not significantly different from private-sector wages of Hispanic and Anglo men with the same human capital characteristics. Black men, however, do get higher wages in government employment.

10. Experience in the Armed Forces does not affect wages in a different way from civilian experience.

11. Health disabilities do not depress wage offers; their often-found negative impact on observed wages is apparently due to sample selection bias.

12. Finally, selectivity bias can be a problem even when estimating wage functions for *men*, using a sample restricted to wage and salary employees. We find a *negative* correlation between the error terms in the equations for the wage and for participation in the wage and salary sector. Moreover, sample selection bias affects estimates of intergroup wage differences, making the difference in average *observed* wages smaller than the true difference in average wage *offers*.

NOTES

[1] Author's tabulations from the 1976 Survey of Income and Education, as reported in Table 4.

[2] For a description of this data set, see U.S. Bureau of the Census (1978).

[3] Seven Hispanic and seven white non-Hispanic men were excluded from the sample as wage outliers.

[4] We used the Bureau of Labor Statistics index of comparative cost of living based on an intermediate budget for a four-person family in autumn 1975 (U.S. Department of Labor, 1977, p. 277). To the extent possible, we matched the person's SMSA of residence with the same SMSA in the BLS survey. When a sample member lived in an SMSA not included in the BLS survey, we used the cost index for the closest comparable SMSA. When a sample member did not live within any SMSA, we used the "nonmetropolitan" cost index for the region of residence.

[5] To see what the sign of the coefficient of $\hat{\lambda}$ implies, assume a person participates if $W_m > W_r$, where
W_m = market wage offer = $X\beta + \varepsilon_1$, and
W_r = reservation wage = nonmarket productivity = $Y\alpha + \varepsilon_3$.
The participation rule can be expressed as:
participates if $X\beta - Y\alpha + \varepsilon_1 - \varepsilon_3 > 0$, or
participates if $Z\gamma + \varepsilon_2 > 0$, where $\varepsilon_2 = \varepsilon_1 - \varepsilon_3$.
The coefficient of $\hat{\lambda}$ is $\sigma_{12} = \mathrm{Cov}(\varepsilon_1, \varepsilon_2) = \mathrm{Cov}(\varepsilon_1, \varepsilon_1 - \varepsilon_3) = \sigma_{11} - \sigma_{13}$, so $\sigma_{12} \gtrless 0$ as $\sigma_{11} \gtrless \sigma_{13}$. For σ_{12} to be negative, as in our results, the covariance between the errors in the market and reservation wages must be

positive and larger than the variance of the error in the market wage offer.

[6] For immigrants who arrived before 1970, the Survey of Income and Education does not give the exact year of immigration. USEXP and FOREXP are constructed by using the mid-point of the period when the person arrived in the United States as the estimated immigration date. This introduces some measurement error into these variables.

REFERENCES

Chiswick, Barry. 1978. The effect of Americanization on the earnings of foreign-born men. Journal of Political Economy, 86 (October), 897-921.

Heckman, James J. 1979. Sample selection bias as a specification error. Econometrica, 47 (January), 153-161.

Oaxaca, Ronald. 1973. Male-female wage differentials in urban labor markets. International Economic Review, 14 (October), 693-709.

Smith, Sharon. 1977. Equal pay in the public sector: Fact or fantasy? Princeton, N.J.: Princeton University Press.

U.S. Bureau of the Census. 1978. Microdata from the Survey of Income and Education. Data Access Description no. 42. January. Washington, D.C.: Data User Services Division, Bureau of the Census.

U.S. Department of Labor. 1977. Handbook of labor statistics. Washington, D.C.: USGPO.

Employment, Wages, and Earnings of Hispanics in the Federal and Non-Federal Sectors: Methodological Issues and Their Empirical Consequences

John M. Abowd
Graduate School of Business
University of Chicago
Economics Research Center/NORC

Mark R. Killingsworth
Department of Economics
Rutgers--The State University
Economics Research Center/NORC

This paper is based on a report prepared for the Employment and Training Administration, U.S. Department of Labor, under Research and Development Grant No. 21-36-78-61. Since grantees conducting research and development projects under government sponsorship are encouraged to express their own judgment freely, this paper does not necessarily represent the official opinion or policy of the Department of Labor. The authors are solely responsible for the contents of this paper and the associated report. We wish to acknowledge the assistance of Anthony Abowd, who performed most of the calculations for this paper and for the detailed report in conjunction with his Ph.D. thesis, in progress at the University of Chicago. Research assistance was provided by Paul McCudden and Leslie Brown of the University of Chicago.

Employment, Wages, and Earnings of Hispanics in the Federal and Non-Federal Sectors: Methodological Issues and Their Empirical Consequences

A major reason for studying employment and earnings differences by race and ethnicity is to determine what such differences imply both about potential employer discrimination and other sources of economic disadvantage resulting from race or ethnic origin. Much domestic policy is concerned with such questions, and information about the extent to which low economic status is related to employer discrimination or to other factors may have important implications for the allocation of resources to different domestic social programs such as antidiscrimination efforts, manpower training, and education programs.[1]

The results of statistical analyses of black/white and male/female wage and earnings differentials generally reveal that (1) on average, black and female wages and earnings are substantially below white male wages and earnings, and (2) even after adjustment for productivity-related factors such as schooling and labor force experience, the adjusted average level of black and female wages and earnings remains below the adjusted average level of white male wages and earnings. The difference between the adjusted average earnings or wages of blacks and of women and the adjusted average earnings or wages of white men is often called "labor market discrimination" to distinguish it from the differences in average earnings and wages that result from different levels of the productivity variables whose influence has been removed in the adjustment.

A major stylized fact that summarizes most of the empirical evidence on wage and earnings differentials is that both the black/white and the male/female adjusted differentials remain statistically and economically important regardless of the economic model or the statistical technique used to analyze the data. Specifically, black/white and male/female "labor market discrimination" have not been fully explained by either structural economic theories or statistical adjustments designed to eliminate a plethora of potential biases. In this paper we show that this stylized finding does not apply to Hispanic/Anglo wage and earnings differentials. Rather, on the whole, Hispanic/Anglo wage and earnings differences can generally be explained by human capital differences, self-selection biases, and statistical biases arising from imperfect measurement of the human capital differences. In particular, most of the difference between Hispanics and white non-Hispanics arises from human capital differences. A smaller but still important part of the difference arises from statistical biases due to measurement problems. Correcting for self-selection bias gives essentially the same results as ordinary regression analysis.

It is not possible to discuss literally all analytical and empirical questions about the sources of labor market differences in a single paper. Accordingly, we have limited the scope of our analyses in order to devote proper attention to (and to extend the range of analyses of) a number of specific issues. One issue to which we devote special attention is employer wage discrimination; another is the extent to which employers in the federal and non-federal sectors discriminate by race or ethnicity in making wage offers.[2]

Before proceeding, we define a number of concepts that figure prominently in what follows.

By "federal" and "non-federal" employment we mean, respectively, employment in the federal government and employment elsewhere in the economy.

By "ethnicity" we mean Hispanic or non-Hispanic ethnic origin, based on the self-declared origin of individuals as either Hispanic or not Hispanic. We subdivide Hispanics into two groups: those of Puerto Rican origin, and other Hispanics. Of course, non-Puerto Rican Hispanics are a heterogeneous group, consisting of Cubans, Mexican-Americans, Europeans, Central and South Americans and others. Thus, conclusions about the Hispanic group refer to the aggregate of such persons and do not necessarily apply equally to each group within this overall aggregate. "Black" refers to blacks who are not Hispanic. Persons who are neither black nor Hispanic are called "white non-Hispanics" or simply "whites." Note, however, that the group we call whites includes a relatively small number of Orientals, American Indians, and others who are not necessarily Caucasian.

By "labor force status" we mean the conventional trichotomy used in most government surveys modified so as to distinguish between employment in the federal sector and employment in the non-federal sector. Thus, in our analyses, any individual's labor force status is always one of the following mutually exclusive and exhaustive conditions: employed in the federal sector, employed in the non-federal sector, unemployed (that is, not employed but seeking employment), or not in the labor force.

Finally, by "ethnic wage discrimination" we mean any difference in total compensation—including both pecuniary and nonpecuniary compensation--that is associated with differences in ethnicity but is not associated with differences in productivity. This definition seems to be standard (for example, see Arrow, 1973, p. 4). Our definition emphasizes something that, while implicit in most definitions of wage discrimination, is worth noting explicitly: wage discrimination means differences in total compensation, rather than just in pecuniary compensation per se. For example, under our definition, pay differentials that are purely compensating or equalizing in nature are not discriminatory even if they are associated with ethnicity but not productivity. By the same token, the absence of a difference in pecuniary compensation may also entail wage discrimination. For example, an employer who offers Hispanic workers the same pecuniary pay but less desirable working conditions than equally productive non-Hispanic workers is behaving in a discriminatory manner, in our sense of that term.

This paper is organized as follows. We first present the economic theory underlying our statistical models, and then discuss the statistical models. We next present a summary of the data used, discuss our results regarding ethnic differences in labor force status, and describe the direct regression results from the Survey of Income and Education data. The reverse regression results from the SIE data follow; we then discuss the structural regression results from the same data. The next section discusses statistical results on federal compensation derived using an alternative data set, followed by comparison of all the statistical results. The final section presents our conclusions.

THE THEORETICAL MODEL

Like most branches of economics, labor economics is concerned with the analysis of supply and demand. As an actual or potential employee, the individual is chiefly concerned with the labor supply decision: he must decide how much to work and the sector in which to work subject to the constraints he faces. Thus, the individual is a constrained utility-maximizer, in the neoclassical sense: he selects the combination of work hours, leisure hours, and job characteristics (including both pecuniary and nonpecuniary compensation) that brings the highest possible level of happiness consistent with the constraints. Sometimes this maximum entails not working at all--for example, individuals who do not succeed in obtaining a job offer over a given period obviously will not be able to work, and other individuals may find that being in school or retirement is more desirable than employment--in which case the individual is either unemployed or not in the labor force. Since the individual maximizes subject to constraints, it makes sense to say that choices are voluntary only if one adds that they are made subject to whatever constraints exist.

While individuals, considered as agents in the labor market, are concerned with the labor supply decision, the major concern of the firm, as an actual or potential employer, is the labor demand decision. The firm must decide how high a wage it is willing to offer and what types of jobs it requires. Faced with a competitive market for hiring employees, firms do not offer more than is necessary to attract proper employees nor offer less than is necessary to fill all positions.

Firms may be viewed as continually making job offers, consisting of pecuniary compensation and a package of job characteristics which, in effect, constitute nonpecuniary compensation. Individuals may be viewed as continually seeking job offers and accepting or rejecting them. What is observed in a collection of data--for example, a sample survey—is the outcome of this job offer and job acceptance (or job rejection) process. The observed wage and employment outcome is the result of the process, not the process itself. For example, the fact that a given person selects a job in the federal sector over a job elsewhere is correctly called endogenous both to the individual's labor supply decision and to the labor demand decisions of employers.

An individual's sector of employment is at least partly a result of an economic decision by the individual about which job to accept (and about whether he will work at all). Each employer assesses the potential productivity of prospective emloyees by analyzing the skills they have to offer in light of the skills it needs. The employer offers prospective workers a package of pecuniary pay and other job characteristics intended to be attractive to them. At the same time, an individual who gets one or more offers decides whether to accept one (and, if so, which) or to reject all offers. After the decision, an outside analyst observes the resulting employment and unemployment. Observed differences in wages, job characteristics, or other outcomes (e.g., concentration of persons in a particular racial group in a particular sector) are all results of this process.

Since firms seek to maximize profits and understand that workers seek to maximize utility, firms will, on average, offer job packages consisting of pecuniary pay and working conditions that will fill the available positions at minimum cost. A firm whose offers are unnecessarily attractive will be flooded with applicants. It, and any competing enterprise, then knows that it can reduce the generosity of its offers, broadly defined, and still attract adequate numbers of applicants. Subject to some important qualifications to be noted below, the utility associated with a given job offer will then fall to the minimum level required to attract the number of workers the firm wants. In this way, then, firms rely on the nature of utility-maximizing behavior of individuals and on the nature of a competitive market to bring labor supply and labor demand into balance. In all cases, individuals decide which of the options available to them is best, subject to the constraints they face.

Of course, employers may sometimes decide, as a matter of conscious policy, to operate out of equilibrium, at least in the sense of an imbalance between the number of persons willing to work for the employer at the current level of generosity of the employer's job package (supply) and the number of positions the employer wants to fill (demand). For example, the federal sector may continually and deliberately make job offers with compensation in excess of the minimum necessary to fill the number of positions it wants to fill. This will result in a waiting list, or queue, for federal jobs. When such a queue exists, the various jobs available need to be allocated or rationed out among the applicants according to some method, formal or informal. For federal government employment, one such method of allocation is political--some of the available jobs may be allocated through a process of explicit or implicit payoffs. In this situation, different groups in the population have an incentive to compete for the political clout necessary for influence over the allocation process. The resources spent competing for such clout eventually bring the system back into equilibrium. If a federal job offers a premium over the minimum amount that the individual would require in order to be willing to accept it, then the individual will be willing to spend resources up to the amount of that premium to get enough clout to be offered that job.

Political allocation may help explain why the federal government can make better job offers and have higher minority employment relative to total employment than other employers. This higher relative minority employment may be in regions where minority political clout is higher. For example, minorities may have political clout in regions where minority population proportions are higher than they are in the country as a whole. This implies that measures of local population proportions for minorities may be relevant to analyses of federal employment.

Of course, non-federal employers, including employers in the private sector, may also--like the federal sector--make wage offers in excess of the minimum necessary to fill the number of positions they want to fill. Marginal private sector employers cannot do so because their profits would be driven below the minimum required for survival. Intramarginal private sector employers may do so if they choose. For example, a private sector employer with access to superior production technology will be more profitable than average; while this greater potential profitability may accrue to shareholders, it may instead take the form of wage offers to some groups that exceed the minimum required to fill the jobs the firm wants to fill. Similarly, a private sector employer may make unnecessarily high or excessive offers as a result of a collective bargaining agreement. In cases such as these, as in our previous discussion of job allocation through political clout, there will be a disequilibrium in the sense that, at the prevailing wage offer, defined broadly so as to include nonpecuniary as well as pecuniary rewards, supply will exceed demand. This will induce adjustments that will eventually bring the market back into equilibrium; as before, such adjustments involve expenditures of resources up to the amount of the premium implicit in the employer's offer. In some cases, such expenditures are implicit and occur through queueing. In other cases, such expenditures are explicit. In still other cases, supply and demand are equated through a rationing mechanism that has little to do with productivity considerations such as when the employer makes offers based on factors like race rather than on the basis of productivity.

The labor market, then, settles into an equilibrium in which the observed distribution of wages and the observed sectoral composition of employment are the result of demand and supply decisions. In what follows, we are concerned in general terms with intrasectoral differentials in employment and wage rates by ethnicity, with special reference to Puerto Ricans. To clarify the nature of some of the issues in which we are particularly interested, consider the following two questions:

Question 1: If one were to take a randomly selected group of individuals from the population of a given ethnic group and change their ethnicity to non-Hispanic (in the case of Hispanics) or to Hispanic

> (in the case of non-Hispanics), while keeping all of their measured and unmeasured productivity-related characteristics the same, then would the average of the wage offers made to such persons in a given sector differ from the offers that such employers would make if they knew the actual ethnicity of these individuals, and if so, by how much?

> Question 2: If one were to take all the individuals in a given ethnic group who are employed in a given sector and change their ethnicity to non-Hispanic (in the case of Hispanics) or to Hispanic (in the case of non-Hispanics), while keeping all of their measured productivity-related characteristics the same, then would the average of their wages computed on the assumption that they were non-Hispanic (in the case of Hispanics) or Hispanic (in the case of non-Hispanics) differ from the actual average of their wages, and if so, by how much?

The answers to these two questions need not be identical. Both questions are of interest for most discussions of employer discrimination in the labor market. However, as we emphasize below, a particular statistical technique may provide a satisfactory answer to one of these questions without yielding any direct or useful evidence on the other.

STATISTICAL MODELS

Direct Wage Regression

The vast majority of studies of wage differentials by race, ethnicity, or sex rely on the methodology of direct wage regression. Under this procedure, one fits an earnings function--with a measure of pay such as earnings or wages as the dependent variable, and with measures of productivity-related characteristics and hypothetically irrelevant characteristics (sex, race) as independent variables--by applying least squares to data on individuals actually employed in some sector of interest. In some cases, as in Mincer's (1974) seminal work, sector means all employed persons. In other cases, sector refers to a single employer, as in the studies by Smith (1977), Malkiel and Malkiel (1973), Oaxaca (1976), Ehrenberg (1979), Osterman (1979), and many others. Regardless of how sector is defined, however, all such studies are investigating wages given that the individuals in the analysis are all in the sector being studied and have both received and accepted an offer from that sector.

It is important to understand what kind of evidence about the source and magnitude of wage and earnings differentials is contained in direct wage regression results. While direct wage regression may provide useful information on some questions, it may provide little or no direct evidence on others. Direct wage regressions analyze wage offers that have been received and accepted. Thus, while it appears that results derived from direct wage regressions may be quite useful for answering what we have called Question 2, they may be much less useful for answering what we have called Question 1.

At the statistical level, it is important to note that, considered only in terms of questions on which it can reasonably be expected to provide useful information, direct wage regression may provide evidence that is misleading--in particular, estimates that may be biased or inconsistent, in a statistical sense. Such bias or inconsistency can arise due either to exclusion of relevant variables or to inclusion of inappropriate variables. Inclusion of inappropriate variables--more generally, endogenous variables--such as occupation may bias direct wage regression results. Endogenous variables such as occupational status are dependent variables that, along with pay, are simply different aspects of the outcome of the interaction between supply and demand. Treating such variables as independent variables in a direct wage regression confuses cause and effect in a fundamental way.

Exclusion of relevant variables may also bias direct wage regression results. For example, prior occupational status may be regarded as a measure of the quality of one's work experience prior to becoming employed by one's present employer. It is therefore a productivity-related characteristic and, by definition, it is exogenous to the behavior of one's present employer. Omission of a potentially important productivity indicator of this kind may entail bias or inconsistency in the estimates of direct wage regression parameters.

The problem of omitted-variable bias has sometimes been misinterpreted or misunderstood, however. In particular, the fact that an omitted variable (e.g., prior work history or prior occupational status) is correlated both with the dependent variable and with an included independent variable does not mean that omission of the variable leads to bias in the coefficient of any particular independent variable included in the regression. Rather, a coefficient will be biased only if the omitted variable is correlated with the dependent variable and with the particularly independent variable at the margin, i.e., when all other independent variables are held constant. Thus, for example, in order to maintain that omission of prior occupational status will bias the coefficient on an ethnicity indicator variable, it is neither necessary nor sufficient to show that persons in different ethnic groups differ in terms of prior occupational status or that prior occupational status is associated with pay. Rather, one must show that persons in different ethnic groups with the same values for the included variables--age, educational attainment, and the like--nevertheless differ in terms of prior occupational status. Thus, the claim that the omission of variables that are plausibly associated with pay even at the margin inevitably biases the coefficient on an ethnicity variable in a direct earnings regression is not persuasive, even when there is reason to believe that persons in different ethnic groups differ in terms of such relevant omitted variables.

A different but related bias is induced by errors of measurement in the included variables. It would be surprising if such variables were always perfect surrogate or proxy measures of productivity, and it is possible that such variables measure actual or expected productivity with error. In this case the coefficients in a direct wage regression may be subject to what Roberts (1979, 1981) has called underadjustment bias. A statistical procedure used to address this problem is called reverse regression.

Reverse Wage Regression

The general phenomenon of measurement error bias in regression models has received attention for many years, and is a standard topic in many econometrics texts (e.g., Kmenta, 1971, pp. 307-322; Maddala, 1977, pp. 292-305). The problem of measurement error bias in direct wage regression, however, has received relatively little attention; most work on this subject is quite recent (e.g., Welch, 1973; Hashimoto and Kochin, 1979; Roberts, 1979, 1980, 1981; Kamalich and Polachek, 1982). Our discussion of measurement error bias in direct wage regression and the conditions under which reverse wage regression may avoid such bias will focus on the bivariate case: the relationship between pay and a single productivity-related characteristic. Either variable may be measured with error. (The analysis of the theory of reverse wage regression in the multivariate case involving the relationship between pay and a vector of productivity-related characteristics is much less tractable.)

Assume that the first two moments of the random variables y^*, p^*, e_1^*, and e_2^* are given by

$$(1)\quad E\begin{bmatrix} y^* \\ p^* \\ e_1^* \\ e_2^* \end{bmatrix} = \begin{bmatrix} \mu_y \\ \mu_p \\ 0 \\ 0 \end{bmatrix} = \underline{\mu},\ \mathrm{Var}[\cdot] = \begin{bmatrix} \omega_{11} & \omega_{12} & 0 & 0 \\ \omega_{12} & \omega_{22} & 0 & 0 \\ 0 & 0 & \omega_{33} & 0 \\ 0 & 0 & 0 & \omega_{44} \end{bmatrix} = \Omega,$$

where y^* is the appropriate pay variable, measured perfectly; p^* is the productivity index, measured perfectly; e_1^* is the measurement error in the pay variable; and e_2^* is the measurement error in the productivity variable. The observable pay, y, and observable productivity, p, are defined as:

$$(2a)\quad y = y^* + e_1^*$$

$$(2b)\quad p = p^* + e_2^*.$$

Accordingly, the first two moments of [y, p] are given by

$$(3)\quad E\begin{bmatrix} y \\ p \end{bmatrix} = \begin{bmatrix} \mu_y \\ \mu_p \end{bmatrix} \quad \mathrm{Var}[.] = \begin{bmatrix} \omega_{11} + \omega_{33} & \omega_{12} \\ \omega_{12} & \omega_{22} + \omega_{44} \end{bmatrix}.$$

The system described by equations (2)-(3) is a standard bivariate measurement error model. True pay, y^*, and true productivity, p^*, are subject to measurement errors e_1^* and e_2^*, respectively, which are assumed uncorrelated with each other and uncorrelated with the other variables in the true system. Since the measurement errors have zero expectation, the true variables, y^* and p^*, have the same expected values as the measured proxies, y and p, respectively. Since the measurement errors are uncorrelated with any other variables in the system, the measured proxies have the same covariance as the true variables. However, the variance of each measured variable exceeds the variance of its true counterpart by the variance of the measurement error.

We consider next the regression relationships connecting the true variables and the proxy variables. By definition, the regression of y^* on p^* can be decomposed into the conditional expectation of y^* given p^* and an expectation error which is uncorrelated with the conditional expectation. We will assume that the conditional expectations are linear in the conditioning variables. In addition, assume that the mean vector $\underline{\mu}$ and the system covariance matrix Ω are different for each race/ethnic group i, i = Hispanic, white non-Hispanic, and black non-Hispanic. For each race/ethnic group i, then, the regression relationships connecting the true variables are given by

$$(4a)\quad y^* = E[y^* \mid p^*]_i + \eta_1^*$$

$$= a_i^* + b_i^* p^* + \eta_1^*$$

$$(4b)\quad p^* = E[p^* \mid y^*]_i + \eta_2^*$$

$$= \alpha_i^* + \beta_i^* y^* + \eta_2^*,$$

where η_1^* and η_2^* are the errors of the conditional expectations and a_i, b_i, α_i, and β_i are the parameters of the linear functional form for the conditional expectations. When the true system is Multivariate Normal or the system is estimated by least squares using the true variables, the conditional expectation parameters are the following functions of the underlying system parameters:

$$(5a)\quad b_i^* = \frac{\omega_{12i}}{\omega_{22i}} \qquad a_i^* = \mu_{yi} - b_i^* \mu_{pi}$$

$$(5b)\quad \beta_i^* = \frac{\omega_{12i}}{\omega_{11i}} \qquad \alpha_i^* = \mu_{pi} - \beta_i^* \mu_{yi}.$$

When the true model is Multivariate Normal, these relationships hold exactly. When the true model is only specified up to its first two moments, as in equation (1), the relationships in (5) hold as the probability limits of the least squares estimators of the theoretical parameters when the true variables are used in the analysis.

Of course, only y and p are directly observable. Consequently, we must know the regression relationship connecting these variables in order to state the implications of the measurement error problem for the discrimination analysis of interest. The regression of y on p is defined as the conditional expectation of y given p. Once again, by the assumption of linear conditional expectations, the regression relationships connecting the observable variables for each race/ethnic group i are given by

$$\text{(6a)}\quad y = E[y^* \mid p^* + e_2^*]_i + \eta_1$$

$$= a_i + b_i\, p + \eta_1$$

$$\text{(6b)}\quad p = E[p^* \mid y^* + e_1^*]_i + \eta_2$$

$$= \alpha_i + \beta_i\, y + \eta_1 .$$

When the true system (1) is Multivariate Normal or when the conditional expectations are estimated by least squares using the observed variables, the conditional expectation parameters in (6) have the following relationship to the theoretical parameters of the underlying system:

$$\text{(7a)}\quad b_i = \frac{\omega_{12i}}{\omega_{22i} + \omega_{44i}} \qquad a_i = \mu_{yi} - b_i\, \mu_{pi}$$

$$\text{(7b)}\quad \beta_i = \frac{\omega_{12i}}{\omega_{11i} + \omega_{33i}} \qquad \alpha_i = \mu_{pi} - \beta_i\, \mu_{yi} .$$

When the true model is Multivariate Normal, these relationships hold exactly. When the true model is only specified up to its first two moments, as in equation (1), the relationships in (7) hold as the probability limits of the least squares estimators of the theoretical parameters when the observed variables are used instead of the true variables. Notice that the presence of measurement errors e_1^* and e_2^* causes the theoretical regression parameters in equations (5)—the starred values—to deviate from the theoretical regression parameters in equation (7)—the unstarred values. Technically, the symmetric measurement error model has the property that the least squares estimators for the regression parameters a_i, b_i, α_i, and β_i are inconsistent estimators of the regression parameters a_i^*, b_i^*, α_i^*, and β_i^* connecting the true variables. However, it is straightforward to verify that the conditional expectation of the proxy pay variable given the true value of the productivity variable is identical to the conditional expectation in (4a). Similarly, the conditional expectation of the proxy productivity variable given the true pay variable is identical to the conditional expectation in (4b).

The inconsistency in the estimators based on the observed variables is at the heart of the criticisms leveled by Hashimoto and Kochin (1979) and Roberts (1979, 1981) against the direct regression methodology in statistical discrimination analyses. Direct regression is identical to least squares estimation of a_i and b_i. These estimators are inconsistent for the theoretical quantities a_i^* and b_i^* (or $\underline{\mu}_i$ and Ω_i). The effect of the inconsistency on the potential inference of statistical discrimination based on the direct regression estimates can be seen by considering the case in which each race/ethnic group has the same theoretical values of a_i^* and b_i^*. Then, the theoretical average difference in observed pay between a member of race/ethnic group i and a member of group j, conditional on the same true value of productivity, p*, is given by

$$(8)\quad E[y_i \mid p^*] - E[y_j \mid p^*] = a_i^* + b_i^* p^* - (a_j^* + b_j^* p^*) = 0,$$

since, by hypothesis, $a_i^* = a_j^*$ and $b_i^* = b_j^*$. However, if the least squares estimates of a_i and b_i are used, the estimated difference in pay between a member of race/ethnic group i and a member of group j, conditional on the same value of observed productivity, p, is given by

$$(9)\quad E[y_i \mid p] - E[y_j \mid p] = a_i + b_i\, p - (a_j + b_j\, p)$$

$$= a_i^* - a_j^* + (b_i^* - b_j^*)\, p + b_i^* \frac{\omega_{44i}}{\omega_{22i} + \omega_{44i}}\, \mu_{pi} - b_j^* \frac{\omega_{44j}}{\omega_{22j} + \omega_{44j}}\, \mu_{pj}$$

$$= b^* \frac{\omega_{44}}{\omega_{22} + \omega_{44}} (\mu_{pi} - \mu_{pj}),$$

since $a_i^* = a_j^*$ and $b_i^* = b_j^*$, by hypothesis. Notice that the expression in (9) is not necessarily zero unless $\mu_{pi} = \mu_{pj}$—that is, unless the average observed productivity index is the same for both groups. Normally, a test of the hypothesis of equal theoretical coefficients in the direct regression is considered a basis for an inference of statistical discrimination. Apparently, this test may support an inference of discrimination even though the theoretical coefficients of interest are equal when productivity is measured with error and the groups have different average values of the productivity proxy.

The analysis is symmetric in its implications for the reverse regression methodology. The least squares estimators of α_i and β_i are inconsistent for the theoretical parameters α_i^* and β_i^*. Reverse regression is identical to least squares estimation of α_i and β_i. The effect of the inconsistency on the potential inference of discrimination based on the reverse regression estimates can be seen by considering the case in which each race/ethnic group has the same theoretical values of α_i^* and β_i^*. Then, the theoretical average difference in observed productivity between a member of race/ethnic group i and a member of group j, conditional on the same true value of pay, y*, is given by

$$(10)\quad E[p_i \mid y^*] - E[p_j \mid y^*] = \alpha_i^* + \beta_i^* y^* - (\alpha_j^* + \beta_j^* y^*) = 0,$$

since, by hypothesis, $\alpha_i^* = \alpha_j^*$ and $\beta_i^* = \beta_j^*$. However, if the least squares estimates of α_i and β_i are used, the estimated difference in pay between a member of the race/ethnic group i and a member of group j, conditional on the same value of observed productivity, p, is given by

$$(11)\quad E[p_i \mid y] - E[p_j \mid y] = \alpha_i + \beta_i y^* - (\alpha_j + \beta_j y^*)$$

$$= \alpha_i^* - \alpha_j^* + (\beta_i^* - \beta_j^*) y + \beta_i^* \frac{\omega_{33i}}{\omega_{11i} + \omega_{33i}} \mu_{yi} - \beta_j^* \frac{\omega_{33j}}{\omega_{11j} + \omega_{33j}} \mu_{yj}$$

$$= \beta^* \frac{\omega_{33}}{\omega_{11} + \omega_{33}} (\mu_{yi} - \mu_{yj}),$$

since $\alpha_i^* = \alpha_j^*$ and $\beta_i^* = \beta_j^*$, by hypothesis. As we noted for expression (9), the mean difference in equation (11) is not necessarily zero unless $\mu_{yi} = \mu_{yj}$—that is, unless the average observed pay is the same for both groups. Apparently, the reverse regression also may support an inference of statistical discrimination even though the theoretical coefficients of interest are equal.

Although equations (9) and (11) are symmetric in their implications for the type of inconsistency induced by least squares analysis of the system (1) when only the system (2) is observed, the two inconsistencies lead to quite different errors in a statistical discrimination analysis. In general, the covariance between pay and productivity is positive

($\omega_{12} > 0$). Therefore, the estimated regression slope parameter is expected to be positive whether one estimates b*, β*, b, or β. Consequently, the sign of the inconsistency depends on the sign of the difference in the mean values of productivity or pay for each race/ethnic group. If ethnic group i has a higher value of the observed productivity index than ethnic group j, then equation (9) implies that direct regression analysis of the observable variables y and p will be biased in the direction of finding discrimination favoring group i even when all coefficients of interest are equal. However, if race/ethnic group i has a higher mean value of observed pay than race/ethnic group j, then equation (11) implies that reverse regression analysis of the observable variables will be biased in the direction of finding discrimination favoring group j even when all coefficients of interest are equal.

Roberts (1981) has called this phenomenon the conflict between two potential definitions of statistical discrimination. Under his first definition, differences in true pay, y*, given the same values of true productivity, p*, are evidence of statistical discrimination: that is, a racial/ethnic group is discriminated against if it has lower expected true pay for a given level of true productivity. As Roberts notes, and equation (9) shows, direct regression estimation of the conditional expectation of observed y given observed p may give spurious evidence of statistical discrimination in the case where one group simply has a higher average value of the productivity proxy p than the other. Under Roberts' second definition of statistical discrimination, differences in true productivity, p*, given the same values of true pay, y* are evidence of discrimination: that is, a racial/ethnic group is discriminated against if it has a higher expected true productivity for a given level of true pay. As Roberts notes, and equation (11) shows, reverse regression estimation of the conditional expectation of observed p given observed y may also give spurious evidence of statistical discrimination in the case where one group simply has higher average measured pay y than the other group. In principle, however, the errors involved in using direct or reverse regression are in the opposite direction. That is, if the observed average pay of group i is greater than the observed average pay of group j, then the observed average productivity of group i is very likely to be higher than the observed average productivity of group j. Under these conditions, direct regression analysis of the proxy variables y and p may lead to an inference of discrimination against group j while reverse regression analysis of the same proxy data may lead to an inference of discrimination against group i.

The direct and reverse conditional expectation definitions of statistical discrimination are not actually different. When applied to the true variables y* and p*, either definition of discrimination leads to the same implications for the structural parameters $\underline{\mu}$ and Ω, as equations (8) and (10) show. In general, true pay cannot be measured exactly since the appropriate measure would include current compensation, fringe benefits, the monetary value of future promotion possibilities, future benefits, and on-the-job amenities. Similarly, true productivity cannot be measured exactly since the true index depends on schooling, types and quantities of previous experience, and various other factors that may be difficult to quantify. The importance of the analysis of direct and reverse regression methods for estimating the parameters underlying either definition of statistical discrimination is that, under typical conditions, the two statistical methods will result in estimates that bound the actual magnitude of discrimination. (However, as noted below, a potential problem with either direct or reverse methodology is the implicit assumption that, if the structure in equation (1) differs across race/ethnic groups in such a way that either equation (8) or (10) is not zero, then such structural differences can erroneously be interpreted as differences in the behavioral equations governing the employment practices of the employer or sector being analyzed.)

We have derived a version of the reverse wage regression method for use in analyses comparable to the direct regression models. The procedure involves two steps. In the first or "direct" stage, we compute an underlying direct regression using a randomly selected half of the white non-Hispanic observations available to us. We use only half of the available observations to fit the direct regression because these estimated coefficients will be used to form a productivity index for the remaining half of the white non-Hispanics and all the black and Hispanic observations. (Splitting the sample avoids inducing spurious correlation between the computed productivity index and the wage rates in the reverse regressions.) The direct regressions used in the first stage involve all the productivity indicators used in the direct regression except, of course, the ethnicity indicators and interactions involving these indicators.

In the second or "reverse" stage, we use the conventional wage or earnings function coefficient estimates from the direct stage to compute predicted wages or earnings y for the remaining observations. We treat this constructed variable $\tilde{y}$ as a proxy measure of productivity. Accordingly, $\tilde{y}$ becomes the dependent variable in our second-stage reverse wage regression. We compute

$$(12)\quad \tilde{y} = a + \underline{b_0}'\underline{d} + b_1 y + \eta,$$

where $\underline{d}$ is a vector of race and ethnicity indicators, y is a measure of pay (e.g., the logarithm of the hourly wage), and η is the regression error term. Thus $\tilde{y}$ is a linear function of y (and $\underline{d}$).

Structural Wage Regression

Both direct and reverse wage regression are concerned with conditional wage relationships. Such techniques are therefore directly concerned with what we have called Question 2—identifying the within-sector differences in wages and earnings for different race/ethnic groups. However, they do not, in general, estimate the parameters governing the structure of the underlying process of supply and demand that generates wage offers; rather, they constitute analyses of the outcome of that process. Neither direct nor reverse wage regression addresses what we have called Question 1—identifying the across-sector differences in wages and earnings opportunities for different race/ethnic groups.

In order to obtain answers to Question 1, it is necessary to address directly the question of the determinants of wage offers. Unfortunately, most data sets, particularly survey data sets, contain information on only a subset of all wage offers—namely, the ones that have been both received and accepted. In particular, in terms of our federal/non-federal sector dichotomy, most cross-sectional survey data on any given individual contain information on only one offer (from either the federal or the non-federal sector) for employed persons, and do not contain information on any offer, from either sector, for persons who are unemployed or not in the labor force.

Such data are said to be censored, in the sense that the investigator does not know the values of certain variables of interest: in the present case, he does not know the values of the federal sector offers available to persons working in the non-federal sector or the values of non-federal sector offers available to persons working in the federal sector; moreover, he does not know the values of the offers from either sector that are available to persons who are unemployed or not in the labor force. Restricting one's analysis to a given sector aggravates the problem: intrasectoral data are truncated, in the sense that a sample consisting exclusively of intrasectoral data is one from which data on persons outside the sector being analyzed have been discarded.

To ignore this truncation completely, as in an intrasectoral direct or reverse wage regression analysis, may subject a study to sample selection bias, at least insofar as answers to Question 1 are concerned (see Heckman, 1979; Heckman, Killingsworth, and MaCurdy, 1981). Sample selection bias may arise in such a study because the data to be used contain only observations on persons who have received and accepted an offer from the sector in question. For example, the observations contained in data for a given sector are in part self-selected, in the sense that, having received an offer from employers in that sector, the persons observed in the data for that sector have all selected themselves into the sample to be analyzed. Application of direct or reverse wage regression to a self-selected sample of this kind may not yield consistent estimates of the parameters of the employer's wage offer function. More generally, a sample of this kind has a sampling distribution determined by both the survey design and the respondent in the sense that it consists of persons who have accepted offers. This makes it not only a self-selected sample, in the sense used above, but also a "selected sample" in the sense that such persons must first have received offers from, and thus must have been selected by, employers.

This suggests that one way to avoid the self-selection biases that may arise in the context of direct or reverse regression analysis of an intrasectoral sample is to derive a model that not only (i) specifies the determinants of wage offers--the relation of primary interest--but also (ii) describes the process of selection by which the individuals in such a sample got into the sample. We start by deriving a model of the selection process, and then show how this model may be used in conjunction with a model of the determinants of wage offers to obtain consistent estimates of the structural wage offer function.

Since the data in the 1976 Survey of Income and Education (SIE), which are used in most of the studies discussed here, refer to a period of unusually severe recession, it is worth noting that problems associated with selection bias may be more important in these data than they would be in data that referred to a period when business-cycle conditions were more normal. For example, results based on direct (or reverse) wage regression analyses of these data might lead to misleading inferences about employer offers by virtue of the fact that nonemployment--either unemployment or absence from the labor force induced by the 1975-76 downturn--during 1975-76 was well above the level observed in more normal periods. In constrast, structural regression in effect makes a statistical correction for possible biases that might be introduced by such pheonomena. Employer wage offers may themselves be affected by cyclical downturns such as the one observed during 1975-76, and structural regression techniques cannot be used to correct for the impact of a slump on wage offers as such. However, structural regression techniques do at least permit a correction for the way in which a cyclical downturn--and the rise in nonemployment during a downturn--might otherwise confound attempts to obtain unbiased measures of the determinants of employer wage offers.

We first derive a model of the way in which individuals are selected into different sectors--i.e., of the determinants of the labor force status of individuals, categorized, as before, as being (i) employed in the federal sector, (ii) employed in the non-federal sector, (iii) unemployed, or (iv) not in the labor force. This model may be used to compute labor force status probabilities (i.e., the probability that labor force status will be any one of these four distinct categories) for every individual. These probabilities may then be used to form instrumental variables for structural wage regression.

The basic notion underlying our model of labor force status determination is the idea of an index function model (see Heckman, Killingsworth, and MaCurdy, 1981) or, more or less equivalently, a discrete choice model (see McFadden, 1973, 1975). An index function model represents the decision-making process of an agent who is faced with the problem of having to choose the best of several alternatives. Associated with each alternative is a particular payoff or reward that is represented by the value of an index. The alternative actually chosen is the one with the highest index--that is, the one with the biggest payoff.

Specifically, recall that we have established four alternative possibilities for labor force status, and let the utility or payoff U associated with each possibility, or sector, s, be given by

$$(13)\quad U_s = V(w_s, q_s, \underline{x}) + v(w_s, q_s, \underline{x}),$$

where V, the systematic component of U, is a function of the wage offered to the individual by employers in that sector; q_s is an index of the characteristics associated with that sector (e.g., one's home or school environment, for the "not in the labor force" sector; the work environment, for the federal employment sector); $\underline{x}$ is a vector of observed characteristics of the individual; and v is an error term (the stochastic component of U). Note that no wage is relevant to being in the unemployed sector or the "not in the labor force" sector. The individual will choose to be in a particular sector s if the utility associated with that choice exceeds the utility associated with any other choice. For example, the individual will choose the federal sector if and only if

$$(14)\quad U_f > \text{Max}(U_n, U_u, U_o),$$

where the f subscript refers to the federal sector, n refers to the non-federal sector, u refers to the unemployment sector, and o refers to the "not in the labor force" sector. Expressions similar to (14) define the circumstances under which the individual willl choose non-federal employment, unemployment, or absence from the labor force. Note that all such choices are subject to the values of the wage offers received from

110

the federal and non-federal sectors, w_f and w_n. Thus, as before, choice is subject to constraints, and statements that choice is voluntary make sense only if one understands both that such choices are constrained and, thus, that the fact that such choices are voluntary has no particular normative implications. Note also that non-receipt of an offer from the federal or non-federal sector may be treated as, and is treated in this analysis as, the equivalent of receipt of a very low offer from that sector.

To specify the decisions process (13)-(14) in a manner suitable for empirical estimation, let the systematic component V of the utility function for sector s (s = f, n, u, or o) be given by

$$(15)\quad V(w_s, q_s, \underline{x}) = a_1(q_s)\, w_s + \underline{x}'\underline{a_2}(q_s),$$

where $a_1(.)$ and $\underline{a_2}(.)$ are, respectively, a scalar and a vector function of q_s, which vary across sectors because of their dependence on the characteristics q_s of that sector. Next, assume that the logarithm of the (best) wage offer available to the individual from employers in sector s (s = f or n) is given by

$$(16)\quad w_s = \underline{z}'\underline{b_s} + e_s,$$

where $\underline{z}$ is a vector of observed variables that affect the wage offer w_s and e_s is an error term whose population mean is zero. Substitute (16) into (15) and rearrange terms, to obtain

$$(17)\quad U_s = \underline{z}'\underline{\gamma}_{1s} + \underline{x}'\underline{\gamma}_{2s} + v_s^* \equiv V_s^* + v_s^*,$$

where $\underline{\gamma}_{1s} = \underline{b}_s \, a_1(q_s)$

$\underline{\gamma}_{2s} = \underline{a_2}(q_s)$

$v^*_s = e_s \, a_1(q_s) + v(w_s, q_s, x)$,

which is linear in all observed variables $\underline{z}$ and $\underline{x}$. (Note that some elements in $\underline{z}$ may also appear in $\underline{x}$, and vice versa).

Finally, let the distribution of the random term v^*_s in (17) be approximately independent Weibull. This means that intersectoral differences between these errors, $v^*_f - v^*_n$, $v^*_f - v^*_u$, $v^*_f - v^*_o$, etc., are all approximately independent logistic.

Together with (14), the independent logistic assumption implies that

$$(18) \quad \Pr\{\text{in sector } s\} = \frac{\exp(V^*_s)}{\exp(V^*_f) + \exp(V^*_n) + \exp(V^*_u) + \exp(V^*_o)}$$

for $s = f, n, u$, or o. Thus, (18) gives the probability that an individual will be in any given sector s as a logistic function of $\underline{x}$ and $\underline{z}$. Note that (18) is therefore a reduced form expression, since it contains both supply and demand variables.

We now consider how to use estimates of parameters governing labor force status, i.e., estimates of (18), to obtain estimates of the parameters of the wage offer equation. We refer to this as structural wage regressions.

As noted earlier, we consider two kinds of employment in our analyses: federal and non-federal employment. Let N_s be the number of persons in sector s; $s = f$ or n. Let w_s be the logarithm of the (best) wage offer for work in sector s available to an individual with characteristics $\underline{x}$, $\underline{z}$, and assume that w_s is given by (16) above.

Now, (16) is an expression for the wage w_s that the individual will receive if he works in sector s and, by assumption, the mean value of w_s in the population as a whole, given $\underline{z}$, is

$$(19)\quad E[w_s \mid \underline{z}] = \underline{z}'\underline{b_s}.$$

On the other hand, the mean value of w_s, given $\underline{z}$, among persons actually working in sector t is

$$(20)\quad E[w_s \mid \underline{z}, s = t] = \underline{z}'\underline{b_t} + E[e_s \mid \underline{z}, s = t].$$

Note that (19) and (20) are equivalent only if the conditional mean of e_s is independent of the condition s = t, i.e., only if the population mean of the error term e_s and the mean of e_s among persons actually employed in sector t are the same. If not, then, in terms of the discussion in the previous section, persons in sector s are a selected sample. The sampling distribution of the e_s in the data is not the same as the distribution of the e_s in nature. This is the case in which conventional least squares analysis of the regression based on a sample restricted to persons actually in sector s will yield biased estimates of the parameters of the wage offer function b_s. Such a regression in effect ignores the second term on the right-hand side of (20), and so will suffer from omitted variable bias, where the omitted variable in question is the conditional mean of e_s. (For further discussion of this point, see Heckman, 1979.)

To derive an alternative to conventional regression that may be used to obtain consistent estimates of the parameters of the wage offer function, note that

$$(21)\quad E[w_s \mid \underline{z},\ s = f] =$$

$$\frac{\int_{-\infty}^{\infty}\int_{-\infty}^{\infty} w_f\, \pi_f(w_f,\ w_n,\ \underline{x})\ p(w_f,\ w_n \mid \underline{z})\ dw_f\ dw_n}{\int_{-\infty}^{\infty}\int_{-\infty}^{\infty} \pi_f(w_f,\ w_n,\ \underline{x})\ p(w_f,\ w_n \mid \underline{z})\ dw_f\ dw_n}\ ,$$

where $\pi_s(w_f,\ w_n,\ \underline{x}) = \Pr\{\text{in sector } s \mid w_f,\ w_n,\ \underline{x}\}$ and $p(w_f,\ w_n \mid \underline{z})$ = the joint density function of w_f, w_n conditional on $\underline{z}$. Approximate the numerator of (21) with a first order Taylor series around the means of w_f and w_n. Approximate the denominator of (21) with the unconditional probability of choosing sector s to obtain an overall approximation:

$$(22)\quad E[w_s \mid \underline{z},\ s = t] = \underline{z}'\underline{b_t}\ \frac{\pi_t(\underline{z}'\underline{b_f},\ \underline{z}'\underline{b_n},\ \underline{x})}{\overline{\pi}_t}\ ,$$

where $\pi_s(w_f,\ w_n,\ x)$ has been evaluated at mean values of w_f and w_n, and $\overline{\pi}_s$ is the average value of π_s in the population. Note that π_s is the probability that an individual will be in sector s and may be computed using estimates of the parameters of (18), while $\overline{\pi}_s$ is the proportion of all persons in sector s.

Equation (22) suggests an instrumental variable estimator of the coefficients $\underline{b_s}$ in the structural wage equation (16). The basis for this claim is the form of the approximation to the conditional expectation of the wage given the sector of employment in equation (22). This is the approximate regression function for w_s given employment in sector s and the exogenous variables $\underline{z}$. Therefore, by construction, the variables on the right-hand side of (22) are orthogonal to the error term in the sector-specific wage regression. These right-hand side variables depend on an unknown ratio $\lambda = \pi(\underline{z}'\underline{b_f}, \underline{z}'\underline{b_n}, x)/\overline{\pi}_s$, which is the ratio of the probability of being employed in sector s evaluated at the mean value of the wage in each sector, given $\underline{z}$, to the average probability of being employed in sector s. This ratio fluctuates around unity. It is higher for individuals with higher than average probabilities of being in sector s and lower for individuals with lower than average probabilities of being in sector s. This ratio may be estimated by using as the numerator probability the fitted value of the estimated logit probability developed above and using as the denominator probability the sample proportion in sector s.

Having developed an estimator for this ratio, we are faced with a choice of strategies for estimating $\underline{b_s}$. First, we could regress the sector-specific wages on the product of $\underline{z}$ and the ratio λ. Since the ratio λ is estimated, this strategy will lead to problems in determining the appropriate measure of precision for this estimator. Alternatively, one may use λ to develop a set of instruments that are correlated with $\underline{z}$ but uncorrelated with the error in the conditional wage expectation given $\underline{z}$ and the sector of employment. These instruments are exactly the right-hand side of equation (22). The λ must still be estimated; however, this approach does not lead to problems in estimating standard errors because the convergence of the moment matrix of the instruments is guaranteed by the consistency of the logit parameter estimates and by the fact that no nonlinear instruments are used as right-hand side variables in the equation being estimated. The estimated residuals may be heteroskedastic; however, in estimation we allow for this possibility.

Each row of the instrument matrix Q is defined as

$$(23) \quad \underline{q}_{1i} = \underline{z}_i \lambda_{si},$$

where $\lambda_{si} = \pi(\underline{z}_i'\underline{b}_f, \underline{z}_i'\underline{b}_n, x_i)/\bar{\pi}_s$, $i = 1, \ldots, N_s$, and N_s = the total sample in sector s. To allow for potential misspecification of the probability-generating process we add a set of instruments, q_{2i}, defined as

$$(24) \quad \underline{q}_{2i} = \underline{z}_i \lambda_{si}^2.$$

The complete instrument matrix Q, then, consists of N_s rows of $[\underline{q}_{1i}', \underline{q}_{2i}']$. The b_s are estimated using instrumental variables:

$$(25) \quad \hat{\underline{b}}_s = [Z_s'Q_s(Q_s'Q_s)^{-1}Q_s'Z_s]^{-1}Z_s'Q_s(Q_s'Q_s)^{-1}Q_s'\underline{w}_s,$$

where Z is the N_s by k matrix of wage equation variables, Q is the N_s by 2k matrix of instruments, and $\underline{w}_s$ is the N_s by 1 vector of wages observed in sector s. The estimator of the asymptotic variance-covariance matrix is

$$(26) \quad \mathrm{Var}[\hat{\underline{b}}_s] = \hat{\sigma}_s^2\ [Z_s'Q_s(Q_s'Q_s)^{-1}Q_s'Z_s]^{-1},$$

where $\hat{\sigma}_s^2$ is the sum of squared structural residuals divided by the sample size N_s

$$(27) \quad \hat{\sigma}_s^2 = (\underline{w} - Z'\hat{\underline{b}}_s)'(\underline{w} - Z'\hat{\underline{b}}_s)/N_s.$$

Conceptually, the structural estimator of the parameters relating w_s to $\underline{z}$ is quite different from both the direct and reverse regression estimators of those parameters. If $\underline{z}$ includes a vector of race/ethnic indicators, say d, then the structural model developed in this paper estimates the coefficients on $\underline{d}$ for the population conditional expectation of w_s given $\underline{z}$ and not for the subpopulation conditional expectation of w_s given $\underline{z}$ and s = t for some sector t. This difference is important, since the structural model attributes behavioral significance to the population conditional expectation and not to the self-selected subpopulation conditional expectation. In a direct or reverse regression analysis of race/ethnic pay differences, the conditional expectation of pay, given the productivity index $\underline{z}'\underline{b_s}$ and given the sector of employment s, may differ across groups because of systematic differences in the employers' pay practices (the usual assumption in statistical discrimination analyses) or because of systematic differences in the workers' preferences, as modeled by the sectoral choice model above. In general the conditional expectation of pay, given $\underline{z}'\underline{b_s}$ and sector s, may differ across race/ethnic groups because of variation in labor demand (employer policies) or labor supply (employee policies). The structural model developed in this chapter makes assumptions sufficient to identify the parameters underlying labor demand (but not labor supply), permitting estimation of the conditional expectation of pay offers given only $\underline{z}$.

DATA USED IN EMPIRICAL STUDIES

Most of the data used in the empirical studies described in this report are derived from the 1976 Survey of Income and Education (SIE).

The SIE was conducted during April-July 1976 by the U.S. Bureau of the Census for the U.S. Department of Health, Education and Welfare (now the Department of Health and Human Services), and was the largest national survey since the 1970 Census of Population. Most of the procedures and definitions used in the SIE are identical to those used in the annual March Current Population Survey (CPS), but the SIE also contains questions pertaining to income, education, and language skills that are not contained in the CPS. For further description of the SIE, see U.S. Bureau of the Census (1978).

We have excluded persons under 21 years old. Among persons 21 years old or older in the SIE data base, 8,168 are Hispanics, 19,501 are black non-Hispanics, and the remainder (246,837) are whites (that is, persons neither Hispanic nor black). Ethnicity is self-reported. Race, however, is determined by interviewer observation.

Second, we have excluded persons not residing in the continental United States; our data therefore exclude persons residing in Hawaii and Alaska, and also, of course, persons living in Puerto Rico.

The SIE therefore refers to a sample of persons in the country as a whole, and geography undoubtedly has major effects on pay through its association with such factors as (i) regional cost-of-living differentials, (ii) regional differences in amenities and also, to the extent that labor is immobile, (iii) regional differences in factor proportions (for example, see Kiefer and Smith, 1977). Moreover, there are important regional differences in the location of minority populations and the location of various industries, including the federal government. In all of our analyses, geography, specifically locational choice, is taken as exogenous. Nevertheless, we have taken several measures to ensure that minority groups are compared with nonminority groups from the same geographic region. The sampling design of the SIE oversampled less populated states, meaning that the geographic distribution of employment opportunities is not sampled randomly.

In order to control for the differences in labor demand across geographic regions, we have used two sets of geographically matched samples in our analyses. The logit models of the labor force status were estimated using samples of blacks and of white non-Hispanics that were geographically matched to our sample of Hispanics. Regression analyses were performed on federal and non-federal samples that were geographically matched to the federal sample.

We did this geographic matching by state and by what the SIE calls central city code, which categorizes persons according to residence in the following way: (1) located in the central city of a Standard Metropolitan Statistical Area (SMSA), (2) located in an SMSA but not in a central city, (3) located outside an SMSA, and (4) location not disclosed (in order to avoid breaching Census regulations governing confidentiality). Relatively small numbers of persons, mainly persons residing in outlying areas, fall into the last of these four categories. Thus, for example, after determining the total number of Hispanics living in the central city area of the Los Angeles-Long Beach SMSA in California, we randomly selected equal numbers of black non-Hispanics and of whites from the total populations of such persons in the same area; and similarly for all other areas. The result of this process of matching was three samples (of Hispanics, black non-Hispanics, and whites, respectively) with the same sampling probabilities for each state and central city code. In addition, we produced two samples (of federal and non-federal employees, respectively) with the same sampling probabilities for each state and central city code. Therefore, five analysis samples were produced: three which were geographicaly matched to the Hispanic data and two which were geographically matched to the federal data.

For the samples geographically matched to the Hispanic sample from the SIE, the sampling probabilities for Hispanics and whites are identical for each state and central city code. However, because there were not enough black non-Hispanics in the original SIE sample for the West and Southwest regions, this group is undersampled for these regions in our sample. All federal employees in the SIE are included in the federal sample. In the non-federal sample, whites are exactly matched geographically but Hispanics and black non-Hispanics are oversampled. Since ethnicity and location are always conditioning variables in the analyses using the federal and non-federal samples, the oversampling of blacks and Hispanics can be expected to reduce sampling error on ethnicity effects without inducing a location bias.

Since we are not able to observe the actual work experience of the individuals in our data, we must use a measure of potential work experience (Mincer, 1974) defined as current age less years of schooling less 5. The problems associated with this proxy are well known, particularly as regards male-female differences in potential vs. actual work experience. Accordingly, we think it appropriate in analyzing differentials in employment status, wages, and earnings to consider men and women separately.

Annual earnings, as defined in our studies, is the total amount of income from work received during the year 1975. The hourly wage, as used in our studies, is computed as the ratio of annual earnings to annual hours of work, where the latter is computed as the product of weeks worked during the year 1975 and usual hours worked per week during the year 1975. Labor force status is defined according to standard Current Population Survey concepts (U.S. Bureau of the Census, 1978) as of the week preceding the actual survey date.

The period 1975-76 was part of an unusually severe recession. This may have implications for the interpretation of our results. In particular, differentials of any kind (skill, racial, etc.) may tend to widen during business-cycle slumps and narrow during booms. To the extent that this is true, the various effects we discuss in this report may overstate somewhat the effects that would be observed during more normal (less recessionary) times.

In addition to the SIE we also used the federal government's Central Personnel Data File (CPDF). The CPDF is a payroll data set based on federal personnel files. CPDF data are derived from various federal payroll documents and are used by the federal Office of Personnel Management and other federal agencies in studying characteristics of the federal civilian work force, in personnel planning, and in other related activities. The CPDF is longitudinal in nature, having begun in 1972 and having been updated on an annual basis since that time; thus, it permits analyses of several different years. Finally, since the CPDF covers essentially all federal employees, it contains large numbers of Hispanics as well as large numbers of persons in other racial and ethnic groups. (For further details on the CPDF, see Schneider, 1974.)

In computing results using the CPDF, we started with samples of 5,000 Hispanics and 5,000 non-Hispanics, selected randomly from the total CPDF populations present in each of the years 1975, 1976, and 1977. As in our work on the SIE data, we then excluded persons who either (i) were not living in the continential United States or (ii) were under 21 years old. This reduced a given year's sample by about 12% to about 8,800 people. About 15% of the persons remaining in any given year's sample after application of this exclusion could not be included in the regression for that year due to missing data (mainly for educational attainment or, to a lesser extent, race or sex). Also, we computed regressions for each year separately for each sex. Thus, the total size of the sample used for regressions for a given sex for a particular year is between about 2,000 (in the regressions for women) and about 5,600 (in the regressions for men).

In order to provide a basis for comparisons between the various statistical procedures described earlier, we estimated a set of different wage and earnings models using the same data and definitions. We briefly discuss the design of these models. All regression models for wages and earnings based on the SIE use the same sets of explanatory variables. The regression models for wages and earnings based on the CPDF use different but similar explanatory variables. The logit models for employment sector based on the SIE use an abbreviated set of explanatory variables. We describe each explanatory variable list in turn.

The dependent variable for the wage and earnings analyses based on the SIE is either the log of the hourly wage rate or the log of annual earnings. Independent variables capture effects on wages associated with human capital, ethnicity, race, age, geography, and other factors. A list of all variables used in the wage and earnings regressions based on the SIE data is as follows:

Dependent Variables

either the natural logarithm of the hourly wage rate
or the natural logarithm of annual earnings

Independent Variables

Group A variables (ethnicity and race indictors—variant 1):
1 if Hispanic, 0 otherwise
1 if black and not Hispanic, 0 otherwise

Group B variables (ethnicity and race indicators—variant 2):
1 if Puerto Rican, 0 otherwise
1 if Hispanic but not Puerto Rican, 0 otherwise
1 if black and not Hispanic, 0 otherwise

Group C variables (human capital, geography, and other factors):
number of years of formal education
1 if graduated from high school, 0 otherwise
1 if graduated from college, 0 otherwise
1 if any postgraduate education, 0 otherwise
1 if currently a full-time student, 0 otherwise
1 if currently a full-time public school student, 0 otherwise
number of years of education received outside the U.S.
1 if had any education outside the U.S., 0 otherwise
1 if taught in English, 0 if taught in any other language

1 if U.S.-born, spoke English as a child, and speaks English now; 0 otherwise

1 if not U.S.-born, 0 otherwise

number of years lived in U.S. (equal to zero, for persons born in U.S.)

1 if English not the primary language spoken as a child, 0 otherwise

1 if English not the primary language spoken now, 0 otherwise

1 if English not spoken or understood very well, 0 otherwise

1 if has any physical condition limiting ability to work, 0 otherwise

1 if age is over 30 and under 41, 0 otherwise

1 if age is over 40 and under 51, 0 otherwise

1 if age is over 50 and under 65, 0 otherwise

1 if age is over 64, 0 otherwise

potential experience (age minus years of schooling minus 5)

square of potential experience

1 if employed part-time, 0 otherwise

1 if a veteran, 0 otherwise

1 if lives in New England area (Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut), 0 otherwise

1 if lives in Middle Atlantic area (New York, New Jersey, Pennsylvania), 0 otherwise

1 if lives in East North Central area (Ohio, Indiana, Illinois, Michigan, Wisconsin), 0 otherwise

1 if lives in West North Central area (Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, Kansas), 0 otherwise

1 if lives in South Atlantic area (Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida), 0 otherwise

1 if lives in East South Central area (Kentucky, Tennessee, Alabama, Mississippi, Arkansas, Louisiana, Oklahoma, Texas), 0 otherwise

1 if lives in Pacific area (Washington, Oregon, or California), 0 otherwise

Group D variables (population proportions and interactions):

proportion of population in area (classified by state, SMSA, and central city) that is black non-Hispanic

proportion of population in area that is Hispanic

proportion black non-Hispanic in area times years of school

proportion Hispanic in area times years of school

proportion black non-Hispanic in area times potential experience

proportion Hispanic in area times potential experience

Group E variables (interactions with race, ethnicity indicators):

Hispanic indicator times years of school

black non-Hispanic indicator times years of school

Hispanic indicator times high school graduation indicator

black non-Hispanic indicator times high school graduation indicator

Hispanic indicator times college graduation indicator

black non-Hispanic indicator times college graduation indicator

Hispanic indicator times postgraduate education indicator

black non-Hispanic indicator times postgraduate education indicator

Hispanic indicator times potential experience

black non-Hispanic indicator times potential experience

Hispanic indicator times square of potential experience

black non-Hispanic indicator times square of potential experience

Group F variables (interactions between race, ethnicity indicators, and population proportions):

black non-Hispanic indicator times percent black non-Hispanic in area

black non-Hispanic indicator times percent black non-Hispanic in area times years in school black non-Hispanic indicator times percent black non-Hispanic in area times potential experience

Hispanic indicator times percent Hispanic in area

Hispanic indicator times percent Hispanic in area times years in school

Hispanic indicator times percent Hispanic in area times potential experience

Group A and Group B variables are indicators for minority status. Group A identifies Hispanics and blacks who are not Hispanics. Group B uses the same black non-Hispanic indicator but distinguishes between Hispanic subgroups, i.e., those of Puerto Rican origin and other Hispanics.

Group C variables are forms of the basic human capital variables normally found in direct wage regressions. The exact form of these variables is, of course, limited by the nature of the data available in the SIE. These variables--for education, age, potential work experience, and the like--are proxies intended to capture the employer's attempt to estimate the productivity of potential employees.

Some variables in Group C go beyond the basic proxies used in most previous research. Variables for years of education outside the United States and for not speaking English as one's primary language are intended to capture effects of immigration and language skills that may affect earnings (see Chiswick, 1978, 1980). Indicators of geographic location reflect the possible impact of region (that is, regional price differentials, capital-labor ratios, etc.) on job offers.

Group D variables reflect local Hispanic and black non-Hispanic population proportions. These population proportions are also multiplied by years of school or potential experience in order to capture possible interactions. Group E variables are interactions between human capital variables (schooling and potential experience) and minority status. Group F variables are triple-interaction effects, i.e., minority indicators multiplied both by minority population proportions and by either years of school or years of potential experience.

Since the CPDF is similar to the personnel data files of a single employer, the variable list for the regression analyses based on these data includes more detailed information on the individual's work history. The variable list does not include the detailed educational, language, and immigrant backgound data found in the SIE. The variables used in the regressions based on the CPDF are as follows:

Dependent Variables

natural logarithm of annualized salary

Independent Variables

Group A (race and ethnicity indicators):

1 if Hispanic, 0 otherwise

1 if black, 0 otherwise

Group B (expanded race and ethnicity indicators):

1 if Hispanic, 0 otherwise

1 if black, 0 otherwise

1 if Oriental, 0 otherwise

1 if American Indian, 0 otherwise

Group C (human capital, geographic location, etc.):

educational attainment indicators (1 if possesses the indicated characteristics, 0 otherwise) for each of the following mutually exclusive categories:

completed elementary school, did not complete high school

has some high school education, but did not complete high school

has high school diploma or equivalent

attended terminal occupational training program, but did not complete it

completed terminal occupational training program

attended less than one year of college

attended one year of college

attended two years of college

has associate-in-arts or equivalent degree

attended three years of college

attended four years of college, but did not receive B.A. or equivalent degree

has B.A. or equivalent degree

has B.A. or equivalent and some post-B.A. training

has first professional degree (e.g., J.D., M.D.)

has first professional degree and some post-first-professional-degree training

has M.A. or equivalent degree

has M.A. or equivalent and some post-M.A. training

has a sixth-year degree (e.g., Advanced Certificate in Education)

has a sixth-year degree and some post-sixth-year degree training

has Ph.D. or equivalent degree

has Ph.D. or equivalent degree and some post-Ph.D. training years since highest degree, for persons with at least a B.A. or equivalent (for persons with less than a B.A., this variable is set at zero)

square of years since highest degree

indicators for field of highest degree, for persons with at least a B.A. or equivalent (1 if field of highest degree is the one indicated and zero otherwise; set at zero for all persons with less than a B.A.), as follows:

  medical doctors (M.D., D.D.S., D.V.M., etc.)

  allied health professions (nursing, therapy, etc.)

  mathematics, architecture, engineering, data processing

  physical or biological sciences

  arts or humanities

  social sciences

  law

age

square of age

years employed in federal government

square of years employed in federal government

product of age and years employed in federal government

1 if has physical or mental disability, 0 otherwise

indicators for veterans' preference (1 if possesses the indicated type of veterans' preference, 0 otherwise), as follows:

  five-point veterans' employment preference

  ten-point disability veterans' employment preference

  ten-point compensable veterans' employment preference

  ten-point other veterans' employment preference (e.g., spouse, survivor)

indicators for state of residence (1 if lives in a particular state, 0 otherwise) for all 48 states in the continental U.S. and the District of Columbia

The Group A and Group B variables differ only in that, in the latter group, we distinguish between Orientals and American Indians, on the one hand, and all other persons who are neither black nor Hispanic, on the other. More or less by definition, this group of all other persons might be called majority white.

Note that our Group C variables (reflecting human capital, geographic location, and the like) are quite similar to the ones used in our SIE regression models in some respects, but are rather different in other respects. In particular, the CPDF data permit us to derive educational attainment indicators that are more detailed than the ones that can be obtained from the SIE data: for example, the latter do not contain any measures of the number of years elapsed since highest degree, or of the field of the highest degree, while the CPDF data do; and while the SIE measures the number of years of school completed, the CPDF data provide somewhat more information about the amount and kind of educational attainment than the simple amount of time spent in school. The CPDF data also contain a measure of years of employment in the federal government, while the SIE data do not contain any measure of actual work experience, even with one's present employer. Of course, on the other hand, the CPDF data do not contain measures of some variables of interest that are available in the SIE. For example, the CPDF data do not contain any information on language skills and also do not differentiate between race or ethnicity. That is, the SIE data classify persons according to both race and ethnicity (which, for example, permits one to differentiate between black and white Hispanics), while in the CPDF classification scheme race and ethnicity are defined in such a way as to make black and Hispanic mutually exclusive.

We use the variables listed above to form two different regression models. The first model uses the simple Group A race-ethnicity indicators and the Group C variables, while the second model uses the expanded Group B race-ethnicity indicators and the Group C variables. Note that the first model, comprising Group A and Group C variables, is most comparable to the basic model used in our SIE regressions.

Because of the problems associated with estimating many parameters in logit models we use a smaller set of the available variables in our analysis of labor force status. The variable list for the logit analyses based on the SIE data is as follows:

Dependent Variable

labor force status, categorized as follows:

- employed in the federal sector
- employed in the non-federal sector
- unemployed
- not in the labor force

Independent Variables

number of years of formal education

potential experience (= age minus years of schooling minus 5)

1 if age is over 30 and under 41, 0 otherwise

1 if age is over 40 and under 51, 0 otherwise

1 if age is over 50, 0 otherwise

number of years lived in U.S. (equal to age, for persons born in U.S.)

1 if born in U.S., spoke English as a child, and speaks English now, 0 otherwise

1 if married with spouse present, 0 otherwise

number of persons in household

percent of population in area (classified by state, SMSA, and central city) that is Hispanic

percent of population in area that is black non-Hispanic

percent Hispanic in area times years of school

percent black non-Hispanic in area times years of school

percent Hispanic in area times potential experience

percent black non-Hispanic in area times potential experience

1 if of Puerto Rican origin, 0 otherwise

We estimate various logit models, containing alternative combinations of these variables, separately for each sex, using separate samples of Hispanics, black non-Hispanics, and white (that is, other) non-Hispanics. Note that an indicator for Puerto Rican ethnicity cannot be included in logits for samples of black or white non-Hispanics because, by definition, this indicator has a value of zero for all such persons. On the other hand, we do include such an indicator in logits for samples of Hispanics in order to distinguish between Puerto Ricans and other Hispanics.

LABOR FORCE STATUS RESULTS

One of our principal interests in this research is to compare the federal and non-federal sectors. The implications of our logit models with respect to employment in these two sectors are summarized in Table 1, which compares the actual and predicted employment sector for each

Table 1

Comparison of Minorities' Predicted Employment Proportions
(Predictions use logit coefficients from the sample of whites)

	Federal Employees			Private Employees		
	Actual %	Predicted %	% Diff.	Actual %	Predicted %	% Diff.
Men						
Hispanic	4.53	3.57	26.9	75.82	75.08	1.0
Puerto Rican	4.58	2.49	83.9	68.64	77.22	-11.1
Hispanic non-Puerto Rican	4.53	3.71	22.1	76.89	77.22	2.8
Black	5.07	2.98	70.1	67.62	73.17	-7.6
White	3.91	—	—	78.41	—	—
Women						
Hispanic	1.65	1.62	1.9	46.61	47.45	-1.8
Puerto Rican	1.35	1.00	35.0	34.28	51.64	-33.6
Hispanic non-Puerto Rican	1.69	1.71	-1.2	48.43	47.06	2.9
Black	3.53	1.29	173.6	50.96	52.08	-2.2
White	1.60	—	—	43.95	—	—

Note: Data base is the Survey of Income and Education; see text for description of analysis.

race/ethnic group. The comparison is based on the characteristics of each individual in the sample (regardless of actual sector). A predicted probability was generated using the estimated logit coefficients for labor force status from the white sample. All comparisons in this table concerning under- or overrepresentation are made relative to white non-Hispanics (men, in the case of the other male ethnic groups; or women, in the case of the other female ethnic groups). A positive entry for a given sector in the column headed "% Diff." indicates that the group in question is overrepresented in that sector relative to white non-Hispanics of the same sex with the same educational attainment, age, etc.; a negative entry indicates underrepresentation.

The main implications of Table 1 may be summarized as follows. First, virtually all minority ethnic groups (that is, groups other than white non-Hispanics) are substantially overrepresented in federal employment relative to white non-Hispanics. (The only exceptions to this generalization are Hispanic non-Puerto Rican women, who are slightly underrepresented in federal employment, and Hispanic women generally, who are only slightly overrepresented in federal employment, on average.) However, note that such overrepresentation in federal employment is only a small proportion of any given group's population. (For example, Table 1 indicates that men of Puerto Rican origin are overrepresented in federal employment in the sense that the actual proportion of such men in federal employment is 4.58%, as opposed to the 2.49% that would be expected if this group acted and were treated in regard to labor force status as white men with identical schooling, age, etc.) In this sense, an end to such overrepresentation would not involve the reallocation of a large number of persons. Second, Puerto Ricans of either sex are also substantially underrepresented in non-federal employment relative to comparable white non-Hispanics. Third, black non-Hispanic males are also underrepresented in non-federal employment. Recall that these differences in labor force status cannot be attributed exclusively to either supply or demand factors (e.g., to individual tastes or to employer discrimination) since the estimated version of the logit model does not identify either of these two behavioral relationships separately.

To complement Table 1, we present in Table 2 a summary of the implications of our logit results concerning the relation between ethnicity and nonemployment, i.e., either unemployment or absence from the labor force. This shows that both men and women in each of the minority ethnic groups considered in our analyses are overrepresented among the unemployed, relative to whites with comparable schooling, age, family composition, etc. Non-Puerto Rican Hispanics of either sex and black women tend to be underrepresented among persons not in the labor force; Puerto Ricans of either sex, and black men, tend to be overrepresented.

All things considered, our logit results suggest that ethnicity as such does not have a particularly pronounced association with labor force status once one holds constant the effects of other supply and demand factors such as age, schooling, family composition, and the like. One simple way to illustrate this is shown in Table 3. In this table, we show how changing the ethnicity of all ethnic groups to white non-Hispanic (without changing their age, schooling, etc.) would alter the distribution of our total sample by labor force status. As shown there, changing the ethnicity of all persons in our sample to white would

Table 2

Comparison of Minorities' Predicted Unemployment and Not-in-Labor-Force Proportions
(Predictions use logit coefficients from the sample of whites)

	Unemployed			Not in Labor Force		
	Actual %	Predicted %	% Diff.	Actual %	Predicted %	% Diff.
Men						
Hispanic	5.83	5.43	7.4	18.03	20.23	-10.9
Puerto Rican	8.92	7.24	23.2	21.51	17.09	25.9
Hispanic non-Puerto Rican	5.43	5.20	.2	17.58	20.63	-14.8
Black	7.16	5.20	37.7	27.38	21.64	26.5
White	3.45	--	--	22.54	—	—
Women						
Hispanic	4.90	4.96	7.5	52.80	53.52	-1.3
Puerto Rican	6.37	4.87	30.8	62.74	49.73	26.2
Hispanic non-Puerto Rican	4.70	4.52	4.0	51.44	54.04	-4.8
Black	7.21	4.78	50.8	41.20	46.69	-11.8
White	3.32	--	--	51.13	—	—

Note: Data base is the Survey of Income and Education; see text for description of analysis.

Table 3

Comparison of Predicted and Actual Labor Force Distribution for Entire Sample

(Predictions use logit coefficients from the sample of whites)

	Men (N = 10,025)		Women (N = 11,361)	
	Actual %	If White, Predicted %	Actual %	If White, Predicted %
Labor Force Status				
Employed	72.86	73.94	45.78	44.89
In federal sector	4.40	3.57	2.09	1.53
In non-federal sector	68.46	70.37	43.69	43.36
Unemployed	5.22	4.62	4.86	4.14
Not in labor force	21.92	21.44	49.36	50.97
Ethnicity				
Hispanic	38.51		37.91	
Puerto Rican	4.36		4.56	
Other	34.15		33.35	
Black	22.99		24.16	
White	38.49		37.93	

Note: Data base is the Survey of Income and Education; see text for description of analysis.

produce rather small shifts in the distribution of our total sample by labor force status. For example, the proportion unemployed among men would fall about 0.6 of a percentage point, while the proportion unemployed among women would fall by about 0.7 of a percentage point. (Recall, also, that our total sample for each sex consists of roughly equal numbers of Hispanics and white non-Hispanics, with somewhat smaller numbers of black non-Hispanics. Thus, minorities are substantially overrepresented in our sample relative to their representation in the population--meaning that any changes of the kind shown in Table 3 would be much smaller in the actual population than they are in our sample.)

DIRECT REGRESSION RESULTS FROM THE SIE DATA

In this section we discuss our direct (conventional least squares) regression results on ethnic pay differences, taking each sex in turn. (See J. Abowd and Killingsworth, 1981, for detailed tables; A. Abowd, 1982, for alternative specifications.)

Results for Men

1. Magnitudes. The pay differential for a given ethnic group relative to comparable white non-Hispanics varies considerably by ethnic group (and, as noted below, to a lesser extent by sector). All differentials are negative, implying that minority ethnic groups tend to be paid less than whites who are otherwise comparable (in terms of the other variables in the regression model from which the differential is derived). They are largest in absolute value (between about -.14 to

-.25) for black non-Hispanics, smallest in absolute value (between about -.01 to -.05) for non-Puerto Rican Hispanics, and of intermediate size (between about -.07 to -.13) for Puerto Ricans.

2. Statistical significance. As measured by t-statistics, the statistical significance of these pay differentials is generally quite substantial for blacks (t-ratios for most black-white differentials are between about 5.9 and 9.9); t-ratios for most Puerto Rican-white differentials are considerably lower (between about 0.8 and 2.2). Most differentials between non-Puerto Rican Hispanics and comparable whites would not be judged statistically different from zero at conventional levels (t-ratios for most of these differentials are between about 0.3 and 1.5).

3. Sectoral patterns. For all three minority ethnic groups, minority-white differentials in wages are larger in absolute value (that is, more negative) in the federal sector than in the non-federal sector, while minority-white differentials in earnings are larger in the non-federal sector than in the federal sector. For example, the black-white wage differential in the federal versus non-federal sector is about -.16 to -.18 (-.14), while the comparable figure for the earnings differential in the federal versus non-federal sector is about -.16 to -.17 (-.25).

4. Alternative dependent variables. For all three minority groups, the wage differential is larger than the earnings differential in the federal sector, but smaller than the earnings differential in the non-federal sector. For example, for Puerto Ricans, the wage (earnings) differential is about -.12 to -.13 (-.08 to -.10) in the federal sector, while in the non-federal sector the wage (earnings) differential is about -.07 to -.08 (-.13).

5. Alternative models. For all three minority groups, estimates of a given differential are relatively robust with respect to alternative models (that is, use of alternative sets of independent variables). For example, regression estimates of the Puerto Rican-white differential are about -.08 to -.12 when population proportion variables are not included, and are about -.10 to -.13 when such variables are included among these regressors. (Changes in differentials for most other race/ethnic groups attendant upon inclusion of these variables are smaller still.)

Results for Women

1. Magnitudes. With a few exceptions, minority-white pay differentials among women are smaller than among men, and many are either positive (implying that certain groups of minority women are paid more than comparable white women) or else essentially zero, in a statistical sense. The black-white pay differential among women is about .05 to -.05; the Puerto Rican-white female pay differential is about .12 to about -.40; and the non-Puerto Rican Hispanic-white pay differential is about .04 to -.13.

2. Statistical significance. On the whole, the statistical significance of minority-white pay differentials, as measured by their t-ratios, is lower among women than among men. Black-white differentials among women have t-ratios in the range 0.6 to 2.1; Puerto Rican-white differentials have t-ratios between .07 and 1.6; and non-Puerto Rican Hispanic-white differentials have t-ratios between .7 and 2.3.

3. Sectoral patterns. With a few exceptions, minority-white pay differentials among women are more negative (that is, lower in absolute

value) in the federal than in the non-federal sector. For example, the black-white pay differential is about -.04 to -.05 in the federal sector, while differentials in the non-federal sector are between about .05 and -.05.

4. Alternative dependent variables. Black-white and non-Puerto Rican Hispanic-white differentials in wages are typically more negative (that is, larger in absolute value if negative, or smaller in absolute value if positive) than are earnings differentials; while in the case of Puerto Rican-white differentials just the reverse holds. For example, the Puerto Rican-white wage differential is about .06 to .12, while the earnings differential is about -.01 to -.40; black-white and non-Puerto Rican Hispanic-white differentials in wages (earnings) are about -.02 to -.13 (.04 to -.09).

5. Alternative models. For all three minority groups, estimates of pay differentials are relatively robust with respect to alternative models (that is, use of alternative sets of independent variables). For example, regression estimates of the Puerto Rican-white wage (earnings) differential are about .06 to .12 (-.01 to -.40) when population proportion variables are not included, and about .06 to .14 (-.01 to -.39) when such variables are included among the regressors in a given model.

REVERSE REGRESSION RESULTS FROM THE SIE DATA

In this section we present the results of our reverse regression analysis for each sex. (See J. Abowd and Killingsworth, 1981, for detailed tables and A. Abowd, 1982, for a discussion of alternative specifications.)

Results for Men

1. Magnitudes. The pay differential for a given ethnic group relative to comparable white non-Hispanics varies considerably by ethnic group (and, as noted below, to a lesser extent by sector). Unlike the direct regression differentials, most of which are negative (implying that minorities tend to receive lower pay than comparable whites), most of the reverse regression differentials are positive (implying that minorities tend to receive higher pay than comparable whites). The black-white differential is between about .06 and -.05; the non-Puerto Rican Hispanic-white differential is between about .14 and .02; and the Puerto Rican-white differential is between about .06 and -.01.

2. Statistical significance. As measured by their t-statistics, the statistical significance of these pay differentials is generally quite substantial for non-Puerto Rican Hispanics (t-statistics for this group are between about 3.7 and 5.9). Black-white differentials in the federal sector, and Puerto Rican-white differentials in the non-federal sector, also have relatively high t-ratios (between about 3.4 and 4.2, and between about 1.5 and 3.1, respectively). However, black-white differentials in the non-federal sector and Puerto Rican-white differentials in the federal sector would not generally be judged different from zero, in a statistical sense, at conventional levels of significance.

3. Sectoral patterns. The magnitudes and even signs of these differentials vary considerably by sector. Puerto Rican-white differentials are always smaller in algebraic value (either negative, or else positive but small) in the federal sector than in the non-federal sector (the

range of federal sector differentials is about .02 to -.01, while the non-federal sector differential is about .06). On the other hand, differentials between non-Puerto Rican Hispanics and comparable whites in the non-federal sector (which are in the range .07 to .02) are smaller than the differentials in the federal sector (which are in the range .14 to .09). Finally, introducing population proportion variables changes completely the sectoral pattern of the black-white differentials. In models in which these variables are not included, the black-white differential in the federal versus non-federal sector is -.04 to -.05 (.02 to .01), but when such variables are included the differential in the federal versus non-federal sector is between about .04 and .06 (.01 and .00).

4. Alternative dependent variables. For all three minority groups, the wage differential is about the same as the earnings differential both in the federal and in the non-federal sector. For example, for Puerto Ricans, the wage (earnings) differential is about .02 to .01 (.00 to -.01) in the federal sector, while in the non-federal sector the wage and earnings differentials are both about .06 and .05.

5. Alternative models. For Puerto Ricans and other Hispanics, estimates of differentials are relatively robust with respect to alternative models (that is, use of alterative sets of independent variables). On the other hand, the federal black-white differential seems to be fairly sensitive to inclusion of population proportion variables. When such variables are excluded, the federal (non-federal) black-white pay differential is between about -.04 and -.05 (.02 and .01), and when such variables are included, the differential is between about .06 and .04 (.01 and .00).

Results for Women

1. Magnitudes. Minority-white pay differentials among women exhibit few obvious patterns; very roughly speaking, there appear to be about as many positive differentials (implying that minority women are paid more than comparable white women) as negative differentials (implying that minority women are paid less than comparable white women), and a large number do not appear to be different from zero (in a statistical sense) at conventional levels of significance. The black-white pay differential is between about .04 and -.17; the Puerto Rican-white pay differential is between about .14 and -.11; the non-Puerto Rican Hispanic-white pay differential is between about .08 and -.01.

2. Statistical significance. On the whole, the statistical significance of minority-white pay differentials, as measured by their t-ratios, is lower among women than among men. Black-white differentials among women have t-ratios in the range 1.1 to 8.6; Puerto Rican-white differentials have t-ratios between .4 and 5.1; and non-Puerto Rican Hispanic-white differentials have t-ratios between .2 and 7.6.

3. Sectoral patterns. With a few exceptions, minority-white pay differentials among women are lower in algebraic value (that is, larger in absolute value if negative, and smaller if positive) in the federal than in the non-federal sector. For example, the black-white pay differential is about -.02 to -.17 in the federal sector, while differentials in the non-federal sector are between about .04 and .02.

4. Alternative dependent variables. Black-white and Puerto Rican-white differentials in earnings are typically more negative (that is, larger in absolute value if negative, or smaller in absolute value if

positive) than are wage differentials. For example, the Puerto Rican-white wage differential is about .14 to .03, while the earnings differential is about -.04 to -.11. On the other hand, non-Puerto Rican Hispanic-white differentials in wages are greater in algebraic value in the federal sector, and are smaller in the non-federal sector, than are non-Puerto Rican Hispanic-white differentials in earnings.

5. Alternative models. For all three minority groups, estimates of pay differentials seem fairly robust with respect to alternative models (that is, use of alternative sets of independent variables). For example, regression estimates of the Puerto Rican-white wage (earnings) differential are about .14 to .03 (-.04 to -.11) when population proportion variables are not included, and about .13 to .05 (-.05 to -.08) when such variables are included among the regressors in a given model.

STRUCTURAL REGRESSION RESULTS FROM THE SIE DATA

We now discuss our structural (instrumental variable) regression results for each sex. (See J. Abowd and Killingsworth, 1981, for detailed tables, and A. Abowd, 1982, for a discussion of alternative specifications.)

Results for Men

1. Magnitudes. The pay differential for a given ethnic group relative to comparable white non-Hispanics varies considerably by ethnic group (and, as noted below, to a lesser extent by sector). In most cases, these differentials are negative (implying that minority groups

are paid less than comparable whites), and many of them are quite close to the corresponding direct wage regression differential. (We say more about this below.) Differentials are largest in absolute value (between about -.14 to -.25) for black non-Hispanics, smallest in absolute value (between about -.01 to -.05) for non-Puerto Rican Hispanics, and of intermediate size (between about -.07 to -.14) for Puerto Ricans.

2. Statistical significance. As measured by their t-statistics, the statistical significance of these pay differentials is generally quite substantial for blacks (t-ratios for most black-white differentials are between about 6.2 and 10.4); t-ratios for most Puerto Rican-white differentials are considerably lower (between about 1.0 and 2.1). Most differentials between non-Puerto Rican Hispanics and comparable whites would not be judged statistically different from zero at conventional levels (t-ratios for most of these differentials are between about 0.3 and 1.5).

3. Sectoral patterns. For all three minority ethnic groups, minority-white differentials in wages are larger in absolute value (that is, more negative) in the federal sector than in the non-federal sector, while minority-white differentials in earnings are larger in the non-federal sector than in the federal sector. For example, the black-white wage differential in the federal versus non-federal sector is about -.18 to -.20 (-.14), while the comparable figure for the earnings differential in the federal versus non-federal sector is about -.17 to -.19 (-.25).

4. Alternative dependent variables. For all three minority groups, the wage differential is larger than the earnings differential in the federal sector, but smaller than the earnings differential in the non-federal sector. For example, for Puerto Ricans, the wage (earnings)

differential is about -.14 (-.11) in the federal sector, while in the non-federal sector the wage (earnings) differential is about -.07 to -.08 (-.13).

5. Alternative models. For all three minority groups, estimates of a given differential are relatively robust with respect to alternative models (that is, use of alternative sets of independent variables). For example, regression estimates of the Puerto Rican-white differential are about -.08 to -.14 when population proportion variables are not included and are about -.07 to -.14 when such variables are included among the regressors.

Results for Women

1. Magnitudes. With a few exceptions, minority-white pay differentials among women are smaller than among men; most are fairly similar to the corresponding direct wage regression estimate; many are essentially zero, in a statistical sense. The black-white pay differential among women is about .06 to -.09; the Puerto Rican-white female pay differential is about .29 to -.53; and the non-Puerto Rican Hispanic-white pay differential is about .03 to -.36.

2. Statistical significance. On the whole, the statistical significance of minority-white pay differentials, as measured by their t-ratios, is lower among women than among men. Black-white differentials among women have t-ratios in the range 0.1 to 1.7; Puerto Rican-white differentials have t-ratios between 0.2 and 0.9; and non-Puerto Rican Hispanic-white differentials have t-ratios between 0.4 and 2.0.

3. Sectoral patterns. Black-white and non-Puerto Rican Hispanic-white pay differentials among women are usually somewhat more negative (that is, lower in absolute value) in the federal than in the non-federal sector. For example, the black-white differential is about -.00 to -.09 in the federal sector, while differentials in the non-federal sector are between .06 and -.02. Finally, the Puerto Rican-white differential is always larger in absolute value in the federal sector than it is in the non-federal sector—but the estimated wage differentials imply that Puerto Ricans are paid more than comparable whites, particularly in the federal sector, while the estimated earnings differentials imply that Puerto Ricans are paid less than comparable whites, especially in the federal sector. (See below.)

4. Alternative dependent variables. Black-white and non-Puerto Rican Hispanic-white differentials in wages are typically more negative (that is, larger in absolute value if negative, or smaller in absolute value if positive) than are earnings differentials; while in the case of Puerto Rican-white wage differentials just the reverse holds. For example, the Puerto Rican-white wage differential is about .25 to .29 in the federal sector (vs. about .05 in the non-federal sector), while the differential in earnings in the federal sector is about -.39 to -.53 (vs. -.02 to -.03 in the non-federal sector).

5. Alternative models. For all three minority groups, estimates of pay differentials are fairly robust with respect to alternative models (that is, use of alternative sets of independent variables). For example, regression estimates of the black-white wage (earnings) differential are about .05 to .29 (-.02 to -.53) when population proportion variables are not included and about .05 to .25 (-.03 to .39) when such variables are included among the regressors in a given model.

DIRECT AND REVERSE WAGE REGRESSION RESULTS FROM THE CPDF DATA

In this section we discuss direct and reverse regression results derived from the federal government CPDF data.

1. Results by race/ethnicity and sex. In general, the CPDF results seem fairly similar to the SIE results as regards racial and ethnic pay differentials by sex within the federal sector. As in the SIE results, the CPDF results imply that both Hispanics and blacks are paid less within the federal sector than are whites (that is, either non-black non-Hispanics, including American Indians and Orientals as well as majority whites; or majority whites as such). In general, black-white pay differentials in the CPDF results are larger in absolute value than Hispanic-white pay differentials; and, for either racial-ethnic group, the minority-white differential among men is larger than the minority-white differential among women. Most of the CPDF differentials are statistically different from zero at reasonable levels of significance.

2. Results by type of statistical model. In our CPDF results, as in our SIE results, reverse wage regression generally produces estimates of differentials that are less negative than those derived using direct wage regression; indeed, in several instances (notably for Hispanics), the direct wage regression estimate of the minority-white differential has a negative sign (implying that minority persons are paid less than comparable whites), but the reverse wage regression estimate is positive (implying that minority persons are paid more than comparable whites). Black women are an exception to this generalization, however; in some cases, the reverse wage regression estimate of the black-white differen-

tial for women is slightly more negative than the corresponding direct wage regression estimate. Finally, the shrinkage in the estimated differential (that is, the extent to which use of reverse wage regression makes a given differential less negative) seems, in general, to be smaller in the CPDF data than in the SIE data.

3. Comparison with results derived from the SIE. On the whole, both the direct and reverse wage regression estimates of the black-white differential derived from the CPDF are similar to the direct and reverse wage regression estimates of this differential derived from the SIE. (However, the CPDF direct wage regression black-white differentials among men seem somewhat smaller, in absolute value, than the corresponding SIE estimates.) On the other hand, the CPDF estimates of the Hispanic-white differential seem, in general, to be somewhat closer to zero (either smaller if positive, or less negative, if negative) than the corresponding SIE estimates. However, the differences between the SIE and CPDF estimates do not, in general, seem particularly large.

COMPARISON OF ALTERNATIVE ESTIMATORS AND RESULTS

We now consider the alternative estimation techniques that we have used in evaluating the determinants of pay. We do this using our preferred results from the SIE for men and for women, which we set out in Tables 4 and 5, respectively. These results are all evaluated at the mean values of all variables for white non-Hispanics and are derived from either our basic regression model (in which case they are labeled "without population proportions") or from our detailed regression model with population proportions but without three-way interactions (in which case they are labeled "with population proportions").

In drawing conclusions about our three different estimation techniques from Tables 4 and 5, it is worth recalling that these techniques are concerned with different statistical and conceptual issues. First, structural regression is concerned with estimating the answer to the first methodological question; that is, with estimating differences in employer wage offers. It does not, however, make a correction for possible measurement error bias. Second, both direct and reverse wage regressions are concerned with estimating the answer to the second methodological question; that is, with estimating differences in compensation conditional on employment. Direct regression does not make a correction for possible measurement error bias while reverse regression does make a correction of this kind. Thus, it would be reasonable to expect that these three different techniques would produce different results. The key issue is, of course, the extent to which results derived from these techniques do in fact differ.

As before, it seems advisable to consider each sex separately. As regards men, it is evident from Table 4 that the reverse regression differentials contrast sharply with both the direct and the structural regression differentials: differentials estimated using either of the latter two techniques are usually negative (and often significantly different from zero, in a statistical sense), while differentials estimated using the former technique are frequently positive. As regards the federal sector, both structural and direct regression differentials are negative, but the latter are usually somewhat smaller in absolute value

Table 4

Summary of Direct, Reverse, and Structural Wage Regression Estimates of Ethnic Differentials in Pay for Men Evaluated at Mean Values of Whites

	Federal Sector			Non-Federal Sector		
	Hispanics of Puerto Rican Origin	Hispanic non-Puerto Ricans	Blacks	Hispanics of Puerto Rican Origin	Hispanic non-Puerto Ricans	Blacks
A. Without Population Proportion Variables						
1. Log Wages						
direct	-.1241	-.0466	-.1789	-.0799	-.0265	-.1426
	(.0820)	(.0321)	(.0183)	(.0481)	(.0232)	(.0192)
reverse	.0201	.1097	-.0471	.0619	.0509	.0215
	(.0497)	(.0186)	(.0111)	(.0201)	(.0085)	(.0897)
structural	-.1413	-.0513	-.1987	-.0783	-.0257	-.1409
	(.0856)	(.0342)	(.0191)	(.0482)	(.0232)	(.0191)
2. Log Earnings						
direct	-.0857	-.0186	-.1650	-.1340	-.0441	-.2476
	(.1072)	(.0419)	(.0238)	(.0628)	(.0303)	(.2503)
reverse	.0042	.1362	-.0517	.0479	.0403	.0133
	(.0682)	(.0255)	(.0151)	(.0323)	(.0137)	(.0145)
structural	-.1083	-.0404	-.1887	-.1344	-.0437	-.2472
	(.1118)	(.0447)	(.0250)	(.0629)	(.0303)	(.0250)
B. With Population Proportion Variables						
1. Log Wages						
direct	-.1279	-.0476	-.1612	-.0697	-.0080	-.1420
	(.0821)	(.0337)	(.0204)	(.0482)	(.0241)	(.0202)
reverse	.0056	.0945	.0390	.0818	.0682	.0093
	(.0521)	(.0195)	(.0116)	(.0211)	(.0090)	(.0095)
structural	-.1444	-.0503	-.1750	-.0676	-.0070	-.1386
	(.0856)	(.0356)	(.0214)	(.0482)	(.0241)	(.0202)
2. Log Earnings						
direct	-.0965	-.0108	-.1564	-.1304	-.0443	-.2497
	(.1073)	(.0440)	(.0267)	(.0630)	(.0315)	(.0264)
reverse	-.0140	.1083	.0584	.0587	.0235	.0030
	(.0705)	(.0264)	(.0156)	(.0325)	(.0137)	(.0146)
structural	-.1134	-.0278	-.1726	-.1299	-.0438	-.2475
	(.1118)	(.0465)	(.0280)	(.0631)	(.0315)	(.0264)

Note: Data base is the Survey of Income and Education; standard errors are in parentheses.

Table 5

Summary of Direct, Reverse, and Structural Wage Regression Estimates of Ethnic Differentials in Pay for Women Evaluated at Mean Values of Whites

	Federal Sector			Non-Federal Sector		
	Hispanics of Puerto Rican Origin	Hispanic non-Puerto Ricans	Blacks	Hispanics of Puerto Rican Origin	Hispanic non-Puerto Ricans	Blacks
A. Without Population Proportions						
1. Log Wages						
direct	.1209	-.1268	-.0501	-.0590	-.0267	-.0119
	(.1576)	(.0567)	(.0236)	(.0619)	(.0262)	(.0189)
reverse	.0320	.0127	-.0512	.1398	.0659	.0329
	(.0765)	(.0264)	(.0110)	(.0276)	(.0183)	(.0095)
structural	.2943	-.3615	-.0025	.0472	-.0290	-.0147
	(.3268)	(.1784)	(.0387)	(.0621)	(.0263)	(.0189)
2. Log Earnings						
direct	-.3962	-.0327	-.0378	-.0075	.0350	.0537
	(.2522)	(.0907)	(.0377)	(.1074)	(.0454)	(.0327)
reverse	-.1133	.0574	-.1665	-.0394	.0176	.0444
	(.1340)	(.0462)	(.0194)	(.0258)	(.0196)	(.0182)
structural	-.5281	.1889	-.0945	-.0185	.0332	.0563
	(.5908)	(.3224)	(.0699)	(.1077)	(.0456)	(.0329)
B. With Population Proportions						
1. Log Wages						
direct	.1363	-.1328	-.0485	.0622	-.0199	-.0149
	(.1575)	(.0586)	(.0263)	(.0621)	(.0273)	(.0195)
reverse	.0548	-.0050	-.0205	.1349	.0802	.0174
	(.0820)	(.0283)	(.0118)	(.0281)	(.0105)	(.0097)
structural	.2474	-.3516	-.0045	.0508	-.0242	-.0173
	(.3264)	(.1759)	(.0381)	(.0622)	(.0273)	(.0195)
2. Log Earnings						
direct	-.3997	-.0911	-.0507	-.0144	.0350	.0402
	(.2523)	(.0938)	(.0421)	(.1077)	(.0473)	(.0338)
reverse	-.0754	.0208	-.1228	-.0513	.0581	.0216
	(.1392)	(.0480)	(.0202)	(.0548)	(.0203)	(.0189)
structural	-.3938	-.1211	-.0112	-.0256	.0321	.0415
	(.5611)	(.3025)	(.0655)	(.1080)	(.0474)	(.0339)

Note: Data base is the Survey of Income and Education; standard errors are in parentheses.

than the former. On the other hand, structural and direct regression differentials for the non-federal sector, while usually negative, are also generally quite close to each other; indeed, in many instances, a structural wage regression differential for the non-federal sector is usually slightly smaller than its direct wage regression counterpart, although the difference is generally very small. Finally, in most instances (particularly as regards the federal sector), t-ratios for structural wage regression differentials are somewhat larger than t-ratios for their direct wage regression counterparts: standard errors of estimated structural wage regression differentials are slightly larger than standard errors of estimated direct wage regression differentials, but the estimates themselves are larger still, particularly for the federal sector.

While Table 4 thus suggests a variety of generalizations concerning the impact of using alternative estimation techniques as far as estimates for men are concerned, Table 5, for women, suggests little in the way of patterns or stylized facts. The three estimation techniques, applied to the federal sector, seem to produce three rather different sets of estimated ethnic differentials among women. Estimates for the non-federal sector derived using the three techniques seem, on the whole and roughly speaking, to be somewhat closer together. However, in many cases—and to a much greater extent than is true of our results for men—the differentials for women reported in Table 5 would not be judged different from zero, at conventional levels of significance, regardless of the technique used in estimating them. In this sense, then, the results of these different estimation techniques are closer together than cursory inspection of Table 5 might suggest.

Table 6 compares the results obtained from both the SIE and the CPDF for the year 1975. For the two estimation techniques considered, direct and reverse, the results from these data sources are quite similar. Essentially the same inferences are supported in either data set.

SUMMARY AND CONCLUSIONS

There is not much consistent or compelling evidence in our results to suggest that minority women generally suffer substantial wage discrimination (in either the Question 1 or Question 2 sense) relative to comparable white women. One possible exception to this statement concerns black women in the federal sector, where our results usually show negative pay differentials. (However, a considerable number of these differentials do not differ from zero, in a statistical sense, at reasonable levels of significance.) An important caveat in this respect is that our data do not contain measures of actual work experience (Garvey and Reimers, 1980). We are, therefore, forced to use a proxy, potential experience.

Second, as regards ethnic differentials in pay among men, our results suggest (a) that minority men may suffer discrimination both in terms of conditional differentials and in terms of offers, and (b) that estimates of the magnitudes of both kinds of discrimination may be subject to serious measurement error bias. Part (a) of this conclusion follows in a straightforward way from consideration of our direct and structural wage

Table 6

Comparison of Ethnic Pay Differentials for Men and Women for 1975 Derived from SIE and CPDF Data

	Men		Women	
	SIE	CPDF	SIE	CPDF
Hispanics				
direct	-.0558 (.0304)	-.0543 (.0080)	-.1020 (.0542)	-.0134 (.0114)
reverse	.0993 (.0176)	.0283 (.0062)	.0146 (.0251)	-.0017 (.0107)
Blacks				
direct	-.1787 (.0182)	-.1381 (.0130)	-.0503 (.0236)	-.0603 (.0151)
reverse	-.0471 (.0111)	-.0421 (.0110)	-.0512 (.0110)	-.0441 (.0147)

Notes: Standard errors are in parentheses. SIE columns present regression differentials derived from the Survey of Income and Education for men and women in the federal sector; dependent variable = natural logarithm of hourly wages. CPDF columns present regression differentials derived from the federal Central Personnel Data File; dependent variable = natural logarithm of annualized salary.

regression results; note that our results provide much stronger support (in the sense of statistical significance) for this proposition with respect to blacks than with respect to Puerto Rican or other Hispanics. Part (b) of this conclusion is prompted by our reverse wage regression results.

Third, our results also suggest that wage discrimination against minority males (particularly blacks) is greater in the federal than in the non-federal sector, while earnings discrimination against minority males (particularly blacks) is smaller in the federal than in the non-federal sector. At first sight, this may seem paradoxical: if the non-federal sector is better than the federal sector as regards wage discrimination, why isn't it also better as regards earnings discrimination? One possible explanation of this apparent paradox has to do with employment instability, which is greater in the non-federal sector than in the federal sector: if minorities suffer substantially and disproportionately (relative to comparable whites) from the relatively greater employment instability (layoffs, etc.) in the non-federal sector, then the non-federal sector could well be worse than the federal sector as regards earnings differentials even if it is better as regards wages. Our logit results on labor force status appear to suggest that minority groups generally are overrepresented among the unemployed. While this finding does not prove the validity of our conjecture about sectoral patterns in wage vs. earnings differentials, it is certainly consistent with it.

Of course, the notion that discrimination within the federal sector may be substantial is not new. Our results not only support this view but also suggest something else: discrimination against minority males, particularly in terms of wages and with respect to blacks, is of greater magnitude in the federal than in the non-federal sector. This is particularly noteworthy because previous studies have tended to suggest just the opposite. We suspect that one reason for this is that, in contrast with previous work, we have attempted to control in a fairly detailed fashion for purely geographic effects on pay (via differences in the cost of living and the like). Since minorities are generally overrepresented in federal employment, and since much federal employment is concentrated in urban areas in particular states, sorting out purely geographic effects on pay (in effect, purely compensating or equalizing premia) from other kinds of effects, including ethnicity, obviously need not be a trivial matter. Indeed, the difference between our results and those found in previous work suggests that such effects may be important.

NOTES

[1] Studies that attempt to decompose earnings differentials into portions attributable to employer discrimination and portions attributable to differences in productivity characteristics such as education include, among others, Blinder (1973), Oaxaca (1973), and Smith (1977). Litigation under Title VII of the Civil Rights Act and other antidiscrimination laws and regulations is implicitly or explicitly concerned with the extent to which observed employment and earnings differences between sexes or between racial or ethnic groups are attributable to employer discrimination per se rather than to other factors such as differences in productivity-related characteristics. Analyses of earnings differences in the context of legal proceedings include Baldus and Cole (1980), Ehrenberg (1979), and Finkelstein (1980).

[2] One important reason for studying employment and earnings differences by sector is that such differences may reveal the extent to which a particular sector is unusual compared to the rest of the economy. (For example, see Smith, 1977.) A second reason is that nonpecuniary rewards to employment may vary by sector: for example, federal government employment may entail greater job security or better working conditions than employment elsewhere in the economy (Smith, 1977). We define wage discrimination as a differential in the total reward to employment, including both pecuniary and nonpecuniary rewards. This reinforces the usefulness of an intrasectoral analysis of wage discrimination since important differences in nonpecuniary compensation across sectors are, in effect, held constant. On the other hand, the fact that such an analysis

may have conceptual advantages over an intersectoral study does not necessarily mean that statistical procedures suitable for the latter kind of study are also suitable for the former kind of study.

REFERENCES

Abowd, Anthony M. 1982. Minority pay differentials in the federal and non-federal sectors. Unpublished manuscript, Graduate School of Business, University of Chicago.

Abowd, John M., and Mark R. Killingsworth. 1981. *An analysis of Hispanic employment, earnings and wages in the federal and non-federal sectors with special reference to Puerto Ricans*. Technical Report no. 21-36-78-61, Department of Labor, Employment and Training Administration. Washington, D.C.: GPO.

Arrow, Kenneth J. 1973. The theory of discrimination. In Orley C. Ashenfelter and Albert Rees, eds., *Discrimination in labor markets*. Princeton, N.J.: Princeton University Press.

Baldus, David C., and James W. L. Cole. 1980. *Statistical proof of discrimination*. New York: McGraw-Hill.

Blinder, Alan S. 1973. Wage discrimination: Reduced form and structural estimates. *Journal of Human Resources*, *12*, 550-560.

Borjas, George J. 1978. Discrimination in HEW: Is the doctor sick or are the patients healthy? *Journal of Law and Economics*, *21*, 97-110.

Chiswick, Barry R. 1978. The effect of Americanization on the earnings of foreign-born men. *Journal of Political Economy*, *86*, 897-922.

Chiswick, Barry R. 1980. The earnings of white and coloured male immigrants in Britain. *Economica*, *47*, 81-87.

Ehrenberg, Ronald G. 1979. *The regulatory process and labor earnings*. New York: Academic Press.

Finkelstein, Michael O. 1980. The judicial reception of multiple regression studies in race and sex discrimination cases. *Columbia Law Review*, *80*, 737-754.

Garvey, Nancy, and Cordelia Reimers. 1980. Predicted vs. actual work experience in an earnings function for young women. In Ronald G. Ehrenberg, ed., Research in labor economics, Vol. 3. Greenwich, Conn.: JAI Press.

Hashimoto, Masanori, and Levis Kochin. 1979. A bias in the statistical estimation of the effects of discrimination. Economic Inquiry, 18, 478-486.

Heckman, James J. 1979. Sample selection bias as a specification error. Econometrica, 47, 153-162.

Heckman, James J., Mark R. Killingsworth, and Thomas MaCurdy. 1981. Empirical evidence on static labour supply models: A survey of recent developments. In Zmira Hornstein, Joseph Grice, and Alfred Webb, eds., The economics of the labour market. London: Her Majesty's Stationery Office.

Kamalich, Richard F., and Solomon W. Polachek. 1982. Discrimination: Fact or fiction? An examination using an alternative methodology. Unpublished manuscript, Department of Economics, University of North Carolina.

Kiefer, Nicholas M., and Sharon P. Smith. 1977. Union impact and wage discrimination by region. Journal of Human Resources, 12, 521-534.

Kmenta, Jan. 1971. Elements of econometrics. New York: Macmillan.

Maddala, G. S. 1977. Econometrics. New York: McGraw-Hill.

Malkiel, Burton G., and Judith A. Malkiel. 1973. Male-female pay differentials in professional employment. American Economic Review, 63, 693-705.

McFadden, Daniel. 1973. Conditional logit analysis of qualitative choice behavior. In Paul Zarembka, ed., Frontiers in econometrics. New York: Academic Press.

McFadden, Daniel. 1975. The revealed preferences of a government bureaucracy: Theory. Bell Journal of Economics, 6, 401-416.

Mincer, Jacob. 1974. Schooling, experience and earnings. New York: Columbia University Press, for the National Bureau of Economic Research.

Oaxaca, Ronald. 1973. Male-female wage differentials in urban labor markets. International Economic Review, 14, 693-709.

Oaxaca, Ronald. 1976. Male-female wage differentials in the telephone industry. In Phyllis Wallace, ed., Equal employment opportunity and the AT&T case. Cambridge, Mass.: MIT Press.

Osterman, Paul. 1979. Sex discrimination in professional employment: A case study. Industrial and Labor Relations Review, 32, 451-464.

Roberts, Harry V. 1979. Harris Trust and Savings Bank: An analysis of employee compensation. Report 7946, Center for Mathematical Studies in Business and Economics, University of Chicago.

Roberts, Harry V. 1980. Statistical biases in the measurement of employment discrimination. In E. Robert Livernash, ed., Comparable worth: Issues and alternatives. Washington, D.C.: Equal Employment Advisory Council.

Roberts, Harry V. 1981. Reverse regression and employment discrimination: Rationale and criticisms. Unpublished manuscript, Graduate School of Business, University of Chicago.

Schneider, Philip A.D. 1974. The central personnel data file. Unpublished manuscript, Bureau of Management Information Systems, U.S. Office of Personnel Management.

Smith, Sharon P. 1977. *Equal pay in the public sector: Fact or fantasy?* Princeton, N.J.: Industrial Relations Section, Princeton University.

U.S. Bureau of the Census. 1978. *Microdata from the survey of income and education*. Data Access Description No. 42, Bureau of the Census, U.S. Department of Commerce.

Welch, Finis. 1973. Black-white differences in returns to schooling. *American Economic Review*, *63*, 893-907.

Relative Earnings of Hispanic Youth in the U.S. Labor Market

Steven C. Myers
Department of Economics
University of Akron

Randall H. King
Department of Economics
University of Akron

This paper was prepared under Grant No. 21-39-81-05 from the Employment and Training Administration, U.S. Department of Labor, under the authority of Title III, part B, of the Comprehensive Employment and Training Act of 1973, as amended. Grantees undertaking such projects under government sponsorship are encouraged to express freely their professional judgment. Therefore, points of view of opinions stated in this paper do not necessarily represent the official position or policy of the Department of Labor. We would like to thank all those who have provided us with their comments at various stages of this paper, especially Dennis Byrne, Timothy Carr, Robert Hall, Daniel Hamermesh, Andrew Kohen, Ross Stolzenberg, and Richard Stratton. Any errors that remain are our own.

Relative Earnings of Hispanic Youth in the U.S. Labor Market

The presence of substantial earnings differentials in the youth labor market provides the motivation for this paper. At a time when we speak of the graying of America, the passing of the post-World War II baby boom, and the increasing dependence of an ever-growing number of retirees on a relatively shrinking number of working men and women, it is vital that we not understate the role of youth in policy formation. What policy makers must consider are the effects of problems encountered early in their labor market experience on the eventual position that youth will hold in the "prime-age" labor force. The youth whom we investigate here are not only laying the foundations for their own economic livelihoods, but are also having an impact on the general economic health of society.

Focusing on Hispanic youth is justified not only by the changing age composition, but also by the changing racial and ethnic composition of the population. The overall U.S. population has indeed aged. However, preliminary data from the 1980 Census show that the principal minority groups--both blacks and Hispanics--have younger age distributions than whites.[1] The size of the Hispanic population has increased substantially in recent years due to relatively high fertility rates, a tendency towards large families, and a continual flow of legal (and illegal) immigrants. Marshall et al. (1980) project that, given a 14% growth rate in the Hispanic population between 1973 and 1978 (as compared to 3.3% for non-Hispanics), Hispanics will represent a larger share of the U.S. population than blacks before the year 2000. Granted the importance of studying the labor market behavior of youth, the study of Hispanic youth in the labor force has both immediate and long-run policy implications.[2]

In this paper we consider the financial position of Hispanic youth vis-à-vis non-Hispanic white and black youth. Two fundamental measures of labor market success--average hourly earnings and wage and salary earnings in the past twelve months--are employed as dependent variables in the analysis.[3]

To accomplish the objectives of this paper, we first regress the dependent variables on the set of independent variables that are discussed in the next section. We then investigate the role of education in early career earnings. We follow that section with a "wage gap" and "annual earnings gap" analysis that permits investigation of the magnitude of earnings differentials among the youth in the sample. The final section presents the summary and conclusions.

THE DATA, CONCEPTUAL FRAMEWORK, AND HYPOTHESES

The 1979 wave of the National Longitudinal Survey of Youth (NLS) provides the data for the analysis.[4] In addition to detailed sections covering education and training, environmental factors, and labor market variables, the survey instrument includes an extensive work history section and information on personal background characteristics. From the background characteristics that were provided, we were able to construct the racial and ethnic identity of each respondent.[5] Unfortunately, the limited number of observations in the NLS data prevent us from analyzing separately the individual Hispanic groups and from focusing on particular geographic regions. Thus, our results must be interpreted as applying to "Hispanics" in general and not necessarily to individual Hispanic groups. Nevertheless, we present separate estimates for Hispanics of Mexican origin in order to provide some insights into this single largest Hispanic group. Overall the sample in the analysis is limited to nonenrolled (i.e., not in school) young men and women who were 16 to 22 years of age and were employed as wage or salary workers in civilian occupations in 1979.

The conceptual framework used in this paper follows standard human capital theory. Such implication of human capital models to Hispanics has been done by various authors, including Carliner (1976), Chiswick (1978), Fogel (1966), Reimers (1980), and Tienda (1981b). Analyses of the earnings of youth also abound in the literature (e.g., Antos and Mellow, 1978; Freeman, 1976; Grasso and Myers, 1977; Griliches, 1976; and King, 1978). However, to the best of our knowledge, investigation of the labor market outcomes of Hispanic youth has only recently been undertaken.

We postulate rather straightforward earnings models as described below. (The earnings-gap models are described at a later point in the paper.) As mentioned, the dependent variables in the analysis include the natural logarithm of average hourly earnings on the respondent's current job and the natural logarithm of an adjusted yearly earnings measure.[6] The conventional log forms of the earnings measures are employed for two reasons. First, it more clearly represents the shape of typical age-earnings profiles; second, it allows interpretation of coefficients in the model as percentage changes rather than absolute changes.

The independent variables used in the analysis and their hypothesized effects are presented below.

Education

The positive net relationship between schooling and earnings is well documented (e.g., Becker, 1975; Mincer, 1974). Also documented is the fact that Hispanics, on average, have relatively little formal education and very high dropout rates from high school (e.g., Briggs, Fogel, and Schmidt, 1977; Newman, 1978). It follows from human capital theory that these high dropout rates must be linked either to a relatively high cost of funds for schooling or, more likely, to relatively low rates of return to schooling among Hispanic youth. Nevertheless, the expectation is, of course, that schooling will be positively related to financial sucess. Following Grasso and Myers (1977), we have categorized this variable into 0-8, 9-11, 12, and 13 or more years of formal schooling in order to disentangle the expected nonlinearity in returns to education.

Experience Measures

We use three measures of actual work experience (measured in months). The first of these, EXP, measures the amount of post-school work experience the individual has accumulated, which is expected to be positively related to earnings. Since our sample is young, the youth involved are, most likely, on the upward-sloping portion of their earnings-experience profile, and the variable EXP enters the models linearly. When EXP is included in the same equation with a second measure of experience (i.e., employer-specific experience, TEN), the interpretation of the EXP and TEN coefficients may be interpreted as the return to general and specific on-the-job training, respectively. The expected sign of TEN is also positive. A third experience variable mesure the respondent's in-school work experience (SEXP). Myers (1980) found SEXP to be a significant determinant of subsequent labor market success (in a sample of college workers). Griliches (1980) found no significant relationship between work in high school and later earnings, but a modest positive effect of work in college on earnings. We hypothesize that in-school experience has a positive payoff in terms of earnings.

Training

The returns to completing a post-school private sector training program (TRCPVT) and to completing a government training program (TRCGVT) are expected to be positive. The important policy questions of the worthiness of particular training programs can only be answered here in a very broad, averaging way due to the heterogeneous nature of the progams that are combined in these variables. Nevertheless, the "controlling" influence of training in the model should yield a better set of results on the education variables.

Occupational Information

The amount of occupational information that the respondents possess is represented by their score on the ten-item Knowlege of the World of Work (KWW) test administered during the interview. At the same time, given the high correlation of a similar variable with IQ results in prior

NLS Youth surveys, we also consider KWW to be a rough control for ability.[7] Since those who exhibit higher levels of labor market information and higher levels of ability should do better in terms of labor market success, we expect to find a positive sign on KWW.

Geographic Variables

We include in this set of variables South/non-South region of residence (SOUTH), urban/rural residence (URBAN), and the (midpointed-categorical) unemployment rate in the local labor market (LOC_U). These variables are included to control for regional price level variations and demand conditions. While the expected sign on SOUTH and LOC_U is negative, we expect a positive sign on URBAN.

Personal History Variables

In all models, we include a variable which takes the value of 1 if the respondent is married (MAR). For young men, this variable is expected to be positively related to labor market success for two reasons. First, it serves as a rough control for differential labor supply behavior. Second, it may proxy for an individual's "attractiveness" to potential employers. For young women, being married may proxy for greater family and home responsibilities, which implies a higher "home wage" and is therefore expected to be negatively related to earnings because of a lower propensity to supply hours to market work. If being married is associated with greater intermittency in labor supply, average hourly earnings will also be lower, owing to the atrophy of human capital skills (Polachek, 1981).

Among Hispanics, the presence of English language difficulties (LANG) is expected to be negatively related to earnings. Lack of proficiency in English may hinder the transferability of skills (Chiswick, 1978), and thus lead to more difficulty in acquiring labor market skills in this country. Our LANG variable is binary, equal to one if the interview had to be conducted in Spanish or if the respondent reported that lack of English fluency hindered his or her ability to get a "good job."

The timing of immigration is shown by Chiswick (1978) to be important. According to that study, an earnings gap exists between the immigrant and the native-born individual, but the gap narrows over time. After 10 to 15 years the gap disappears. Unfortunately, the NLS does not contain the date of immigration. Therefore, two proxies can be used. The first is birth in a foreign country (B_FOR), which distinguishes the immigrant from the native-born resident.[8] The second is foreign residence at age fourteen (FOR _14). According to Chiswick, the longer the time since immigration, the less an earnings disadvantage exists. Thus, the coefficient on B_FOR may be negative, zero, or positive, but is expected to be greater than the sum of the coefficient on B_FOR and the coefficient on FOR_14. That is, FOR_14 is expected to be non-positive.[9]

Additional variables indicate ethnicity (HISP, PUERTO, MEX), race (BLACK) and sex (FEM). In the results that follow we segregate the runs by sex and provide results for total, Hispanic, Mexican, black, and white samples. Ideally, we would prefer to separate all Hispanic groups, but small sample sizes make that impossible.[10]

In the total, the Hispanic, and the Mexican equations, two models are estimated. Model 2 includes the variables LANG and FOR_14. Model 1 omits those measures, since they are fairly highly correlated with other variables in the models, especially with the education set. The high correlation makes it difficult to disentangle the independent effects of the variables and also contributes to high standard errors. The sample is limited to nonenrolled young men and women who were 16 to 22 years of age and employed as wage salary workers in civilian occupations in 1979. All regression equations have been population-weighted because of the intentional oversampling of Hispanics, blacks, and low-income whites. Table 1 lists the variables and the direction of their hypothesized effects.

RESULTS

Gross Comparisons

Prior to reporting the results of the regression equations, it is instructive to discuss briefly the means of variables used in the analysis (Tables 2 and 3). As can be seen, Hispanic men have extremely high dropout rates from high school (almost 60% versus about 40% for black males, and about 25% for white males).[11] However, for all male cohorts the rates are alarming, especially in view of the well-known and well-publicized relationship between high school graduation and labor market success (see, e.g., King, 1978). The dropout rates for women are considerably lower, but still fairly high—34% for Hispanics and about 12% for blacks and whites. In terms of higher education, 7.5% of Hispanic men have completed at least one year of college, a figure that falls between the means for whites (10.7%) and blacks (4.7%). Among Hispanic men,

Table 1

Variables and Direction of Hypothesized Effect in LNWAGE and LNERN Regression Equations

Variable	Expected Sign
ED 0-8	-
ED 9-11	-
ED 13+	+
SEXP	+
EXP	+
TEN	+
TRCPVT	+
TRCGVT	+
KWW	+
SOUTH	-
URBAN	+
LANG[a]	-
LOC_U	-
MAR(Men)	+
MAR(Women)	-
FOR_14[a]	-
HISP[b]	-
MEX[c]	?
PUERTO[c]	?
BLACK	-

Note: For definitions of variables, see text. ED 12 is the reference group. Data base is the 1979 National Longitudinal Survey of Youth. All regression equations are population weighted because of the intentional oversampling of Hispanics, blacks, and low-income whites.

[a] Total, Hispanic, and Mexican equations only (Model 2).

[b] Total equation only.

[c] Hispanic equation only.

Table 2

Means and Standard Deviations of Variables Used in LNWAGE and LNERN Analysis: Young Men

Variable	Total		Hispanic		Mexican		Black		White	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Dependent Variables										
LNWAGE	1.457	0.396	1.371	0.346	1.358	0.350	1.323	0.388	1.482	0.397
LNERN	8.786	0.860	8.628	0.822	8.568	0.852	8.263	1.232	8.871	0.768
Duncan Index	22.833	15.161	20.601	14.069	19.378	13.902	19.618	12.640	23.455	15.498
Independent Variables										
ED 0-8	0.071	0.256	0.282	0.451	0.306	0.463	0.082	0.275	0.053	0.223
ED 9-11	0.215	0.411	0.308	0.463	0.297	0.458	0.323	0.469	0.193	0.395
ED 12	0.616	0.487	0.335	0.473	0.350	0.479	0.548	0.499	0.647	0.478
ED 13^{+}	0.098	0.298	0.075	0.263	0.047	0.213	0.047	0.212	0.107	0.310
SEXP	6.216	14.268	3.990	10.201	3.721	8.739	4.425	12.872	6.637	14.690
EXP	15.428	11.320	16.664	13.140	15.813	12.147	12.845	10.528	15.693	11.234
TEN	14.171	17.301	13.865	16.530	12.302	14.712	12.490	16.244	14.429	17.500
TRCPVT	0.110	0.314	0.077	0.267	0.051	0.220	0.074	0.263	0.118	0.323
TRCGVT	0.021	0.145	0.038	0.192	0.051	0.221	0.077	0.267	0.012	0.111
KWW	6.597	1.962	5.258	2.181	5.084	2.141	5.064	1.980	6.915	1.791
LANG	0.059	0.235	0.291	0.455	0.289	0.455	0.070	0.256	0.039	0.194
SOUTH	0.292	0.455	0.239	0.428	0.273	0.447	0.546	0.499	0.261	0.439
URBAN	0.758	0.428	0.953	0.213	0.937	0.240	0.849	0.359	0.730	0.444
FOR_14	0.029	0.168	0.268	0.444	0.286	0.454	0.002	0.045	0.015	0.120
LOC_U	6.242	2.243	5.676	2.398	5.415	2.531	5.655	1.793	6.368	2.268
MAR	0.170	0.376	0.202	0.402	0.230	0.422	0.088	0.284	0.179	0.384
HISP	0.063	0.244	1.000	0.000	1.000	0.000	0.000	0.000	0.000	0.000
MEX	0.042	0.200	0.657	0.476	1.000	0.000	0.000	0.000	0.000	0.000
PUERTO	0.008	0.091	0.132	0.339	0.000	0.000	0.000	0.000	0.000	0.000
BLACK	0.115	0.319	0.000	0.000	0.000	0.000	1.000	0.000	0.000	0.000
WHITE	0.822[a]	---	0.000	0.000	0.000	0.000	0.000	0.000	1.000	0.000
AGE	19.688	1.361	19.487	1.494	19.571	1.420	19.808	1.374	19.687	1.347

Note: All means and standard deviations (except LNERN) from LNWAGE equation.

[a] Calculated as residual.

Table 3

Means and Standard Deviations of Variables Used in LNWAGE and LNERN Analysis: Young Women

Variable	Total		Hispanic		Mexican		Black		White	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	ST
Dependent Variables										
LNWAGE	1.216	0.350	1.198	0.307	1.195	0.307	1.166	0.407	1.222	0.346
LNERN	8.373	0.858	8.234	0.994	8.187	0.993	8.067	1.162	8.414	0.802
Independent Variables										
ED 0-8	0.026	0.158	0.146	0.355	0.213	0.412	0.000	0.000	0.020	0.141
ED 9-11	0.110	0.313	0.197	0.399	0.167	0.375	0.126	0.333	0.103	0.304
ED 12	0.671	0.470	0.509	0.502	0.496	0.503	0.610	0.489	0.688	0.463
ED 13$^+$	0.193	0.395	0.148	0.356	0.125	0.332	0.263	0.442	0.189	0.391
SEXP	5.085	10.670	4.487	8.915	3.165	8.114	3.732	10.836	5.264	10.755
EXP	14.780	11.681	13.485	11.325	12.444	9.560	11.211	9.618	15.278	11.833
TEN	12.099	12.711	11.366	12.413	11.6[illegible]	11.619	9.680	10.843	12.395	12.886
TRCPVT	0.145	0.352	0.095	0.294	0.091	0.290	0.112	0.317	0.151	0.359
TRCGVT	0.035	0.184	0.051	0.220	0.063	0.245	0.130	0.338	0.024	0.154
KWW	6.713	1.842	5.617	2.050	5.493	2.041	5.652	2.034	6.895	1.744
LANG	0.048	0.213	0.190	0.393	0.198	0.401	0.037	0.190	0.039	0.195
SOUTH	0.294	0.456	0.280	0.451	0.274	0.448	0.596	0.492	0.264	0.441
URBAN	0.815	0.388	0.965	0.183	0.973	0.163	0.875	0.332	0.799	0.401
FOR_14	0.016	0.125	0.166	0.373	0.169	0.377	0.000	0.000	0.008	0.086
LOC_U	6.082	2.048	5.667	2.294	5.600	2.546	5.727	1.623	6.145	2.064
MAR	0.289	0.454	0.333	0.473	0.296	0.459	0.212	0.410	0.294	0.456
HISP	0.057	0.231	1.000	0.000	1.000	0.000	0.000	0.000	0.000	0.000
MEX	0.029	0.169	0.517	0.501	1.000	0.000	0.000	0.000	0.000	0.000
PUERTO	0.006	0.077	0.106	0.308	0.000	0.000	0.000	0.000	0.000	0.000
BLACK	0.088	0.283	0.000	0.000	0.000	0.000	1.000	0.000	0.000	0.000
WHITE	0.856[a]	---	0.000	0.000	0.000	0.000	0.000	0.000	1.000	1.000
AGE	19.788	1.310	19.615	1.468	19.560	1.541	19.932	1.225	19.785	1.307

Note: All means and standard deviations (except LNERN) from LNWAGE equation.

[a] Calculated as residual.

those of Mexican origin attend college at the same rate as blacks, and at about two-thirds the rate of the entire Hispanic sample. A different story is told for women. In all cases, the female cohorts have a higher incidence of college attendance than their male counterparts. Among women, Hispanics are least likely to have attended college as compared to blacks and whites.

While we find that Hispanic men have fewer months of actual job experience during school, they have more experience than blacks or whites when we measure experience from date of leaving school to the interview date. This is, however, not surprising since all groups are about the same age and since Hispanics have lower educational attainment. Hispanic men place slightly below the overall mean in terms of specific employer experience (TEN). In all cases, men of Mexican origin have lower mean experience values than the set of all Hispanics. In general, the same generalizations regarding the experience measures apply to Hispanic women. However, mean in-school experience of Hispanic women is higher than for blacks, and their post-school work experience is about two months less than that of white women.

Hispanic men are less likely than white men and about as likely as black men to have completed a private sector training program. They are, however, about three times as likely as white men—but only half as likely as black men—to have completed a government-sponsored program. The same generalizations tend to hold for the female cohorts, except that women are more likely than men to have completed a training program outside of regular school. For both men and women, Mexican-origin youth are less likely than all Hispanics to have completed a private sector training program, but more likely to have completed a government-sponsored program.

We find that Hispanic men and women score about 20 to 25% lower than whites on the occupational information test (KWW). The difference in scores between Hispanics and blacks is negligible. Hispanics of Mexican origin score slightly lower than the total Hispanic sample.

Turning to the geographic variables, we see that Hispanics are much more likely to reside in an urban area than either male or female whites or blacks (over 95% for Hispanics versus about 75% for the total sample of men and just over 80% in the female sample). Hispanics are about as likely as whites to live in the South (about 25%), while over 50% of the black sample resides in that region. Hispanics and blacks face about the same labor market demand conditions, on average. White men and women face higher local unemployment rates.

As is expected in this age range, there are substantial differences among cohorts with regard to marital status. Seventeen percent of the men in the sample were married at the time of the 1979 interview, while 28% of the young women were married. Hispanics are slightly more likely to be married than the black or white samples—20% of Hispanic men and 33% of Hispanic women. Blacks are much less likely than the others to be married. Only 9% of black men and 21% of black women are married.

Twenty-nine percent of Hispanic men reported difficulty in speaking English. That figure fell to about 20% in the female Hispanic sample. Probably the major explanation of this differential between the sexes was the finding that only 17% of the Hispanic women were residing outside the United States at age fourteen, compared to 27% of the Hispanic men.

There was very little difference between Hispanics of Mexican origin and all Hispanics on either the language or residence-at-age-fourteen measures.

Average Hourly Earnings (LNWAGE)

The mean of average hourly earnings (wages) is highest for white youth and lowest for black youth, with Hispanic young men and women in the middle. We also note that Hispanics of Mexican origin (over one-half of all Hispanics) have mean earnings slightly below those of all Hispanics.

We turn now to the estimates from the regression equations for men (Table 4) and for women (Table 5). The use of regression analysis allows us to "control" for differences, both among Hispanics and between Hispanics and the other groups, in order to focus on the independent effects of the variables in the models. Since the focus of this study is on Hispanics, we will discuss below only those equations with direct bearing on the Hispanic cohort—the male and female "total," "Hispanic," and "Mexican-origin" equations. We also report the "black" and "white" equations, and will use those results for purposes of comparison.

Total sample. In this equation we include dummy variables indicating those who are Hispanic and black. We note that while this naïve test exhibits a negative relationship between minority status and hourly earnings, it is statistically significant only for black men.[12] That is, while Hispanics and blacks earn less than whites, only blacks earn significantly less. The bulk of the remaining variables in the total equations—education, post-school experience, occupational information

Table 4

LNWAGE Regression Results for Young Men

	Total		Hispanic		Mexican		Black	White
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2		
Constant	1.312	1.323	1.636	1.689	1.643	1.689	1.285	1.289
	(19.67)	(19.63)	(8.59)	(8.85)	(8.55)	(7.85)	(8.55)	(14.75)
ED 0-8	-.225	-.202	-.153	-.073	-.173	-.104	-.382	-.177
	(-4.65)	(-4.07)	(-2.21)	(-0.94)	(-2.02)	(-1.06)	(-4.22)	(-2.49)
ED 9-11	-.082	-.083	-.035	-.023	-.089	-.082	-.103	-.082
	(-2.83)	(-2.86)	(-0.54)	(-0.35)	(-1.03)	(-0.95)	(-1.98)	(-2.07)
ED 12	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—
ED 13+	.061	.062	.050	.029	-.055	-.077	.042	.065
	(1.57)	(1.60)	(0.51)	(0.30)	(-0.36)	(-0.50)	(0.38)	(1.31)
SEXP	-.004	-.004	.004	.004	.005	.005	-.001	-.001
	(-3.37)	(-3.37)	(1.25)	(1.11)	(1.18)	(1.06)	(-0.47)	(-0.47)
EXP	.007	.007	.004	.005	.004	.005	.008	.008
	(5.60)	(5.65)	(1.39)	(1.78)	(1.21)	(1.46)	(2.68)	(4.41)
TEN	.001	.001	-.002	-.002	-.004	-.004	-.002	-.002
	(1.47)	(1.45)	(-0.80)	(-0.88)	(-1.43)	(-1.41)	(-0.87)	(1.60)
TRCPVT	.033	.033	.201	.199	.016	.017	.183	.013
	(0.93)	(0.93)	(2.09)	(2.08)	(0.11)	(0.12)	(2.10)	(0.28)
TRCGVT	-.028	-.030	.196	.196	.085	.088	.080	-.180
	(-0.36)	(-0.38)	(1.57)	(1.57)	(0.59)	(0.61)	(0.92)	(-1.36)
KWW	.018	.017	-.004	-.004	.001	.001	.025	.020
	(2.74)	(2.58)	(-0.30)	(-0.35)	(0.04)	(0.08)	(1.96)	(2.20)
LANG	—	-.016	—	-.045	—	-.027	—	—
	—	(-0.28)	—	(-0.58)	—	(-0.30)	—	—
SOUTH	-.117	-.124	-.052	-.106	-.011	-.057	-.100	-.126
	(-4.39)	(-4.62)	(-0.89)	(-1.68)	(-0.16)	(-0.76)	(-1.86)	(-3.53)
URBAN	.059	.061	-.058	-.068	-.109	-.119	.038	.056
	(2.21)	(2.27)	(-0.51)	(-0.60)	(-0.83)	(-0.91)	(0.54)	(1.67)
FOR_14	—	-.127	—	-.124	—	-.114	—	—
	—	(-1.57)	—	(-1.53)	—	(-1.15)	—	—
LOC_U	-.013	-.014	-.034	-.036	-.034	-.036	-.018	-.012
	(-2.59)	(-2.68)	(-3.05)	(-3.26)	(-2.54)	(-2.71)	(-1.32)	(-1.83)
MAR	.125	.125	.171	.150	.216	.190	.102	.126
	(4.06)	(4.03)	(2.84)	(2.48)	(2.89)	(2.46)	(1.23)	(3.12)
HISP	-.060	-.031	—	—	—	—	—	—
	(-1.24)	(-0.61)	—	—	—	—	—	—
MEX	—	—	-.061	-.060	—	—	—	—
	—	—	(-0.99)	(-0.99)	—	—	—	—
PUERTO	—	—	-.023	-.035	—	—	—	—
	—	—	(-0.27)	(-0.42)	—	—	—	—
BLACK	-.057	-.059	—	—	—	—	—	—
	(-1.51)	(-1.54)	—	—	—	—	—	—
R_A^2	.17	.17	.13	.14	.10	.10	.20	.15
F	15.65	14.04	2.94	2.92	2.17	2.03	5.57	9.79
Number	1069	1069	200	200	133	133	239	630
Mean of Dep. Var.	1.46	1.46	1.37	1.37	1.36	1.36	1.32	1.48
SD of Dep. Var.	.40	.40	.35	.35	.35	.35	.39	.40

Note: Universe is young men not in school, 16 to 22 years old, employed as wage or salary workers in civilian occupations in 1979. T-statistics are in parentheses.

Table 5

LNWAGE Regression Results for Young Women

	Total		Hispanic		Mexican		Black	White
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2		
Constant	1.124	1.155	1.248	1.241	1.387	1.375	.981	1.132
	(16.17)	(16.52)	(6.33)	(6.17)	(4.62)	(4.53)	(5.39)	(13.41)
ED 0-8	-.105	-.088	-.145	-.158	-.082	-.174		-.071
	(-1.45)	(-1.19)	(-1.85)	(-1.73)	(-0.80)	(-1.14)	a	(-0.73)
ED 9-11	-.169	-.160	.007	.010	.094	.100	-.338	-.165
	(-4.44)	(-4.22)	(0.10)	(0.13	(0.87)	(0.91)	(-3.31)	(-3.50)
ED 12	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—
ED 13+	.107	.110	.191	.189	.178	.191	.040	.120
	(3.65)	(3.76)	(2.38)	(2.34)	(1.41)	(1.49)	(0.49)	(3.40)
SEXP	-.002	-.002	-.003	-.003	-.002	-.001	.003	-.003
	(-2.20)	(-2.08)	(-0.91)	(-0.87)	(-0.28)	(-0.25)	(1.00)	(-2.22)
EXP	.003	.003	.001	.000	-.003	-.003	.015	.003
	(2.60)	(2.31)	(0.23)	(0.17)	(-0.40)	(-0.35)	(2.61)	(1.87)
TEN	.001	.002	.004	.004	.007	.007	-.004	.001
	(1.34)	(1.48)	(1.59)	(1.62)	(1.12)	(1.05)	(-0.88)	(1.12)
TRCPVT	.075	.080	.068	.071	.071	.079	-.017	.081
	(2.40)	(2.61)	(0.77)	(0.79)	(0.56)	(0.61)	(-0.17)	(2.21)
TRCGVT	-.061)	-.066	.068	.072	.019	.023	-.175	-.024
	(-1.01)	(-1.10)	(0.60)	(0.63)	(0.13)	(0.16)	(-1.91)	(-0.28)
KWW	.002	.002	.009	.010	.007	.009	.004	.001
	(0.30)	(0.35)	(0.71)	(0.72)	(0.38)	(0.44)	(0.21)	(0.13)
LANG	—	-.233	—	-.009	—	.056	—	—
	—	(-4.35)	—	(-0.10)	—	(0.35)	—	—
SOUTH	-.063	-.066	-.160	-.157	-.106	-.085	-.044	-.063
	(-2.41)	(-2.53)	(-2.70)	(-2.56)	(-1.18)	(-0.91)	(-0.65)	(-1.96)
URBAN	.054	.043	-.040	-.041	-.150	-.165	.064	.058
	(1.83)	(1.48)	(-0.29)	(-0.30)	(-0.62)	(-0.67)	(0.64)	(1.70)
FOR_14	—	.135	—	.036	—	.C87	—	—
	—	(1.40)	—	(0.40)	—	(0.56)	—	—
LOC_U	.000	-.002	-.018	-.018	-.020	-.020	.008	.001
	(0.08)	(-0.41)	(-1.45)	(-1.43)	(-1.33)	(-1.33)	(0.40)	(0.13)
MAR	-.028	-.026	.009	.009	-.041	-.034	.030	-.037
	(-1.15)	(-1.07)	(0.18)	(0.17)	(-0.51)	(-0.42)	(0.39)	(-1.26)
HISP	.017	.028	—	—	—	—	—	—
	(0.34)	(0.57)	—	—	—	—	—	—
MEX	—	—	.021	.022	—	—	—	—
	—	—	(0.39)	(0.40)	—	—	—	—
PUERTO	—	—	.045	.041	—	—	—	—
	—	—	(0.52)	(0.45)	—	—	—	—
BLACK	-.022	-.020	—	—	—	—	—	—
	(-0.54)	(-0.50)	—	—	—	—	—	—
R_A^2	.08	.10	.08	.07	.01	.03	.14	.08
F	6.81	7.24	1.91	1.67	0.95	0.86	3.16	5.21
Number	963	963	155	155	85	85	154	654
Mean of Dep. Var.	1.21	1.21	1.20	1.20	1.19	1.19	1.17	1.22
SD of Dep. Var.	.35	.35	.31	.31	.31	.31	.41	.34

Note: Universe is young women not in school, 16 to 22 years old, employed as wage or salary workers in civilian occupations in 1979. T-statistics are in parentheses.

[a]No observations.

(for men), the geographic variables (except LOC_U in the female equations), and marriage (for men)--support our hypotheses. The unexpected findings include the negative relationship between in-school work experience (SEXP) and wages, the lack of significance for the training variables (except private training for women), and statistical insignificance in the female cohorts for occupational information and marriage.

Hispanic sample. The only variables that are statistically significant in the positive direction for Hispanic men are post-school experience, private-sector and government-sector training, and being married (Table 4). Variables negatively related to hourly wages include the local area unemployment rate, residence in the South, and living outside the United States at age fourteen. In-school work experience, tenure on current job, occupational information, residence in an urban area, and presence of language difficulties are all statistically insignificant. In the Mexican-origin equation for young men, we find essentially the same results with only a few variations—training is insignificant, increased tenure is associated with lower wages, and SOUTH and FOR_14 are insignificant.

We find it surprising that the education variables do not attain statistical significance. Only Hispanic men who have completed less than nine years of schooling earn significantly less than high school graduates, and that is true only in Model 1. However, one reason for this result is the age range of the sample. Prior work has documented that the early labor market effects of education may be substantially lower than the measured effects of education in the longer run (see King, 1978). For example, individuals with greater amounts of formal schooling may be more likely to become employed in occupations that involve relatively large amounts of on-the-job training (OJT). Since the payoff to OJT is not immediate (especially if the training is general), it will affect the slope of the age-earnings profile, but will not be observable at a single point in time. Thus, since we are dealing with a very young cohort at only a single point, we may be seriously understating the long-run labor market impact of education.[13]

Both post-school training variables are significant determinants of wages for the total sample of Hispanic men, but not for men of Mexican origin. Blacks, however, do have early labor market gains from private sector training. Finally, we note in passing that marriage is associated strongly with higher wages among all cohorts of men but particularly so among Hispanics.

We now turn our attention to the LNWAGE equations for young women (Table 5). We note that many variables are statistically significant in the "total" equations--the education set, EXP and TEN (but, again, in-school experience is associated with lower wages), TRCPVT, SOUTH, and URBAN. It is particularly noteworthy in the total runs that Hispanic women do not earn significantly less than the entire sample, after adjusting for differences in the independent variables. In fact, they earn slightly more per hour than others.

When we compare the wage equations for Hispanic and Mexican-origin women, we are able to notice differences between the members of these groups. We note that one or more years of college is a significant determinant of higher wages. However, few of the remaining variables attain statistical significance. For example, dropping out of high school (ED

9-11) was a significant determinant of lower wages only for blacks and whites (leaving school before the ninth grade had negative repercussions for the set of all Hispanics). Years of service with the current employer (TEN) did attain significance for all Hispanics, but not for blacks, whites, or Hispanics of Mexican origin. Total post-school experience (EXP) was only significant for black and white women. Residence in the South and high local area unemployment rates were significantly related to lower wages for Hispanic women. Further, LOC_U is only significant in the Hispanic equations, indicating the disproportionate burden Hispanic women bear when local demand conditions are inadequate.

The policy variables of occupational knowledge (KWW) and post-school training programs were not found to be statistically significant determinants of higher wages for Hispanics, although the coefficients in all cases did carry the expected signs. Difficulties with the English language and place of residence at age fourteen also failed to reach statistical significance.

Annual Wage and Salary Earnings (LNERN)

In this section we investigate the determinants of yearly earnings. Since yearly earnings is the product of hourly wages and yearly hours of work, any factor that affects either will be a determinant of earnings. Thus, this section draws on both labor supply aspects as well as the previous section on hourly wages.

Hours of work. Before proceeding with the LNERN regression equations, it is instructive to observe how the components of yearly wage

Table 6

Relationships of Hourly and Annual Earnings and Hours and Weeks Worked, by Cohort

	Young Men			Young Women		
	Hispanic	Black	White	Hispanic	Black	White
Mean Wage (dollars/hour)	$4.20	$ 4.08	$ 4.79	$3.52	$3.49	$3.58
Mean Hours Worked Per Week	41.28	38.18	41.75	36.95	37.00	36.57
Mean Weeks Worked Per Year	40.43	36.17	42.93	38.31	34.26	41.82
Mean Hours Worked Per Year	1,680	1,423	1,807	1,431	1,299	1,543
Mean Yearly Wage and Salary Income[a]	$7,054	$5,806	$8,656	$5,037	$4,534	$5,524

[a] Calculated from the product of wage (W) and Hours Worked Per Year (H). The difference between the reported value and the actual mean $\{\text{i.e., } (1/n)\sum W \cdot H\}$ is the covariance of W and H.

and salary earnings vary across the cohorts (Table 6). Here, as in the LNWAGE case, Hispanics fall between whites, who have the highest earnings, and blacks, who have the lowest. In addition, we note that Hispanics also fall between whites and blacks along the dimension of total yearly hours worked. However, the differences among the cohorts in terms of yearly hours is not uniform: Hispanic men and women work 93% as many hours per year as do their white counterparts, while black men work only 83% as many hours as do Hispanic men, and black women work 90% as many hours as Hispanic women. Thus, we find a larger percentage difference between the cohorts when we examine yearly earnings than is the case for hourly earnings.

Total sample. As in the LNWAGE results for the total sample, the education variables are strong and significant (Tables 7 and 8). Post-school experience is significant, but TEN reaches significance only for young women, and in-school work experience narrowly reaches significance in the equation for young men. Private sector training has a positive impact for women, but neither training variable is significant for men. The only remaining statistically significant variables in the female equations are LOC_U and MAR.

In the equations for young men, we find that KWW is a significant determinant of yearly income. In addition, men who are married are likely to have higher income levels. Men residing in the South or in high unemployment-rate areas earn significantly less than others. We again note that black men and women have significantly lower yearly earnings than the others in the sample—and that difference is of substantial magnitude. Among Hispanics, however, such is not the case. While

Table 7

LNERN Regression Results for Young Men

	Total		Hispanic		Mexican		Black	White
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2		
Constant	8.317	8.322	9.185	9.205	9.134	9.225	7.655	8.343
	(59.36)	(59.01)	(22.09)	(21.95)	(20.01)	(20.13)	(16.95)	(49.62)
ED 0-8	-.456	-.435	-.368	-.383	-.343	-.293	-.790	-.357
	(-4.51)	(-4.21)	(-2.36)	(-2.17)	(-1.81)	(-1.38)	(-3.00)	(-2.64)
ED 9-11	-.293	-.295	-.182	-.191	-.303	-.313	-.242	-.286
	(-4.69)	(-4.72)	(-1.28)	(-1.34)	(-1.66)	(-1.73)	(-1.56)	(-3.66)
ED 12	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—
ED13+	.127	.129	-.024	-.043	.189	.128	.168	.126
	(1.50)	(1.52)	(-0.10)	(-0.18)	(0.50)	(0.34)	(0.43)	(1.29)
SEXP	.003	.003	.018	.017	.019	.017	.027	.002
	(1.33)	(1.29)	(2.44)	(2.39)	(1.91)	(1.79)	(2.56)	(0.67)
EXP	.033	.033	.039	.039	.038	.039	.079	.028
	(12.08)	(12.11)	(6.59)	(6.52)	(5.63)	(5.74)	(6.95)	(8.83)
TEN	.000	.000	-.014	-.014	-.010	-.009	-.017	.001
	(0.06)	(0.03)	(-2.59)	(-2.51)	(-1.51)	(-1.33)	(1.70)	(0.45)
TRCPVT	.046	.045	.095	.100	.181	.210	.346	.006
	(0.60)	(0.60)	(0.44)	(0.46)	(0.52)	(0.61)	(1.43)	(0.06)
TRCGVT	-.065	-.061	-.062	-.071	-.303	-.305	.348	-.438
	(-0.40)	(-0.37)	(-0.21)	(-0.24)	(-0.90)	(-0.92)	(1.40)	(-1.65)
KWW	.028	.027	.032	.035	.024	.026	.043	.027
	(1.99)	(1.95)	(1.21)	(1.30)	(0.72)	(0.81)	(1.11)	(1.59)
LANG	—	.146	—	.204	—	.250	—	—
	—	(1.23)	—	(1.08)	—	(1.13)	—	—
SOUTH	-.091	-.101	-.216	-.250	-.185	-.286	-.073	-.107
	(-1.63)	(-1.78)	(-1.66)	(-1.78)	(-1.21)	(-1.73)	(-0.46)	(-1.55)
URBAN	.062	.064	.435	-.432	-.573	-.563	-.116	-.069
	(1.01)	(1.14)	(-1.60)	(-1.58)	(-1.81)	(-1.79)	(-0.57)	(-1.06)
FOR_14	—	-.354	—	-.225	—	-.418	—	—
	—	(-2.03)	—	(-1.19)	—	(-1.90)	—	—
LOC_U	-.028	-.028	-.076	-.081	-.105	-.117	-.059	-.022
	(-2.59)	(-2.62)	(-3.07)	(-3.22)	(-3.48)	(-3.84)	(-1.42)	(-1.72)
MAR	.181	.189	.242	.243	.348	.332	.344	.184
	(2.74)	(2.85)	(1.82)	(1.81)	(2.21)	(2.06)	(1.37)	(2.33)
HISP	-.116	-.067	—	—	—	—	—	—
	(-1.13)	(-0.62)	—	—	—	—	—	—
MEX	—	—	-.324	-.318	—	—	—	—
	—	—	(-2.42)	(-2.37)	—	—	—	—
PUERTO	—	—	-.337	-.358	—	—	—	—
	—	—	(-1.81)	(-1.91)	—	—	—	—
BLACK	-.368	-.376	—	—	—	—	—	—
	(-4.58)	(-4.67)	—	—	—	—	—	—
R_A^2	.32	.32	.35	.35	.40	.40	.41	.27
F	29.78	26.60	7.14	6.38	6.63	6.07	11.88	16.19
Number	927	927	174	174	113	113	207	546
Mean of Dep. Var.	8.79	8.79	8.63	8.63	8.57	8.57	8.26	8.87
SD of Dep. Var.	.86	.86	.82	.82	.85	.85	1.23	.77

Note: Universe is young men not in school, 16 to 22 years old, employed as wage or salary workers in civilian occupations in 1979. T-statistics are in parentheses.

Table 8

LNERN Regression Results for Young Women

	Total		Hispanic		Mexican		Black	White
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2		
Constant	8.159	8.159	7.159	7.121	7.977	7.971	6.956	8.311
	(49.62)	(48.82)	(12.41)	(12.10)	(9.81)	(9.66)	(15.08)	(43.48)
ED 0-8	-.428	-.437	-.190	-.248	-.072	-.209	a	-.541
	(-2.34)	(-2.34)	(-0.76)	(-0.86)	(-0.24)	(-0.49)		(-2.28)
ED 9-11	-.350	-.340	.090	.097	.441	.451	-.571	-.377
	(-3.78)	(-3.66)	(0.43)	(0.45)	(1.45)	(1.46)	(-2.00)	(-3.45)
ED 12	—	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—
ED 13+	.197	.197	.110	.120	-.169	-.153	.196	.237
	(2.78)	(2.77)	(0.45)	(0.49)	(-0.50)	(-0.44)	(0.93)	(2.89)
SEXP	.003	.003	.013	.012	.037	.037	.029	.000
	(0.98)	(1.05)	(1.18)	(1.14)	(2.50)	(2.47)	(3.49)	(0.06)
EXP	.026	.026	.038	.038	.075	.075	.082	.022
	(8.89)	(8.85)	(3.72)	(3.69)	(3.41)	(3.32)	(5.46)	(7.02)
TEN	.007	.007	.009	.009	-.012	-.012	-.012	.007
	(2.75)	(2.76)	(1.01)	(0.97)	(-0.66)	(-0.64)	(-0.91)	(2.40)
TRCPVT	.274	.279	.263	.265	.201	.218	.166	.274
	(3.72)	(3.78)	(0.93)	(0.93)	(0.53)	(0.56)	(0.65)	(3.31)
TRCGVT	.088	.086	-.673	-.672	-1.069	-1.062	-.159	.323
	(0.63)	(0.61)	(-1.80)	(-1.78)	(-2.70)	(-2.64)	(-0.70)	(1.67)
KWW	.000	.002	.058	.063	.052	.056	.004	-.010
	(0.00)	(0.15)	(1.47)	(1.54)	(0.96)	(0.99)	(0.10)	(-0.52)
LANG	—	-.170	—	.200	—	.227	—	—
	—	(-1.26)	—	(0.70)	—	(0.48)	—	—
SOUTH	.050	.051	-.114	-.105	-.399	-.383	.011	.060
	(0.80)	(0.81)	(-0.63)	(0.57)	(-1.63)	(-1.50)	(0.06)	(0.82)
URBAN	-.015	-.024	.445	.423	-.359	.381	.118	-.024
	(-0.22)	(-0.34)	(1.11)	(1.05)	(-0.55)	(-0.56)	(0.46)	(-0.31)
FOR_14	—	.283	—	-.105	—	-.034	—	—
	—	(1.26)	—	(0.38)	—	(-0.08)	—	—
LOC_U	-.038	-.040	-.055	-.055	-.068	-.072	.019	-.042
	(-2.90)	(-2.98)	(-1.50)	(-1.50)	(-1.63)	(-1.66)	(0.38)	(-2.75)
MAR	-.194	-.194	-.180	-.175	-.417	-.403	-.236	-.200
	(-3.38)	(-3.38)	(-1.08)	(-1.04)	(-1.86)	(-1.76)	(-1.17)	(-3.05)
HISP	-.002	-.017	—	—	—	—	—	—
	(-0.02)	(-0.15)	—	—	—	—	—	—
MEX	—	—	.080	.102	—	—	—	—
	—	—	(0.49)	(0.60)	—	—	—	—
PUERTO	—	—	.140	.190	—	—	—	—
	—	—	(0.54)	(0.70)	—	—	—	—
BLACK	-.278	-.275	—	—	—	—	—	—
	(-2.86)	(-2.83)	—	—	—	—	—	—
R_A^2	.24	.24	.28	.27	.33	.31	.36	.23
F	18.77	16.72	4.50	3.95	3.92	3.32	7.58	13.97
Number	851	851	139	139	77	77	138	574
Mean of Dep. Var.	8.37	8.37	8.23	8.23	8.19	8.19	8.07	8.41
SD of Dep. Var.	.86	.86	.99	.99	.99	.99	1.16	.80

Note: Universe is young women not in school, 16 to 22 years old, employed as wage or salary workers in civilian occupations in 1979. T-statistics are in parentheses.

[a] No observations.

Hispanics do earn less per year than the total sample, the difference is not statistically significant.

Hispanic sample. As in the case of the LNWAGE runs, the education variables are not all significant, but among men the relationship between education and yearly earnings is much stronger than that between education and hourly earnings. Both groups of male high school dropouts fare significantly worse than their counterparts who completed high school. (Among women, however, that relationship does not hold.) In fact, among all men (including the equations for blacks and whites) the high school graduates were significantly better off financially. The experience measures are also fairly consistent across cohorts. In-school experience (SEXP) is generally significant for men (except for white men) and, in the case of women, is significant for those of Mexican origin and for blacks. The measure of post-school experience (EXP) is uniformly significant across all equations for both sexes. On the other hand, TEN bears a negative relationship to LNERN for Hispanic and black men and for Mexican-origin and black women.

The training variables are not significant for either Hispanic men or for Hispanic women. Indeed, government-sponsored training is associated negatively with LNERN in the case of Hispanic males. Knowledge of the World of Work is generally significant for Hispanics in general, but not for those of Mexican origin. Language difficulties and foreign residence at age fourteen are not statistically significant (except the latter in the case of Mexican-origin men), but living in an urban area is negatively related to income for Hispanic men. Hispanic men who reside in the South earn less per year than other Hispanics, while only women of Mexican origin show that relationship among the women in the sample. As expected, we generally find a significant negative relationship between local-area unemployment rates and earnings.

Among Hispanic men, we find that those of Mexican or Puerto Rican origin have significantly lower yearly earnings than do other Hispanics. For women, however, that relationship does not hold. Finally, we note that married men in all cohorts have significantly higher yearly income than nonmarried men. Among the set of married women, those of Mexican origin and whites earn significantly less per year than their nonmarried counterparts.

The Role of Education

As explained above, our specification distinguishes education levels in a breakdown of 0-8, 9-11, 12, and 13 or more years of education. With some exceptions, most researchers specify models with years of education (ED), expressed in continuous form.[14] In order to provide some comparability to other studies we estimate the models discussed above with ED as the independent variable. The results are shown in Table 9. As can be seen from the table, the estimates in most cases are significantly different from zero at the 10% level.

The desired comparability is limited for a variety of reasons. First, no two data sets and/or variable sets are constant across authors, given their different objectives. Second, our sample is men and women of ages 16 to 22 years, which is rather unusual in current Hispanic research. Thus, estimates from our sample of youth will differ from those of older (or even full-age) samples. Third, and most important, we have estimated results

Table 9

Rates of Return to Years of Education (percentages)[a]

		Men		Women	
Sample	Model	LNWAGE	LNERN	LNWAGE	LNERN
Total	1	4.3	11.1	6.5	13.2
	2	4.0	11.0	6.4	13.6
Hispanic	1	2.5	6.1	3.3	4.8
	2	1.7	6.6	3.2	5.0
Mexican	1	1.9	6.2	2.9	2.4[b]
	2	1.5[b]	5.9	3.1	2.3[b]
Black	1	7.0	19.8	9.6	20.1
White	1	3.8	10.0	7.1	15.8

[a] Given an earnings equation of the form $\ln Y_s = \ln Y_0 + rs$, where Y_s = annual earnings of an individual with s years of schooling, the coefficient r may be interpreted as the rate of return to schooling under the following three assumptions: (1) the cost of a year of schooling = foregone earnings in that year (i.e., direct costs are exactly offset by in-school earnings); (2) r is constant over all individuals; and (3) r is constant over years of schooling (i.e., marginal r = average r) (see Becker and Chiswick, 1966; Leibowitz, 1976).

[b] Not statistically significant at the 10% level.

across all Spanish-origin groups under the generic term "Hispanic." Most other studies, where sample sizes permit, break out such groups as Mexican, Puerto Rican, Cuban, Central or Latin American, and other Hispanic. We are only able to do this for Mexican. Table 10 presents a comparison of a sampling of previous research.[15] As can be seen, our estimates fall close to those listed in all cases except among men in the LNWAGE estimation. In this case, our estimates lie considerably below those of both Reimers and Borjas. As we have stated before, since our sample is very young, the effect of schooling on wages has not yet been fully realized. Thus, our results probably do understate the rate of return to education.

Intercohort Earnings Gap

In this section we wish to investigate further the observed hourly and annual earnings differences among the cohorts. A simple summary of proportional wage and yearly earnings differences using unadjusted mean values of LNWAGE and LNERN yields the results in Table 11. We note that white men, on average, earn about 12% more per hour and 27% more per year than do Hispanic men. White women surpass Hispanic women in earnings by 1% per hour and 20% per year. Comparing earnings of Hispanics and blacks, we note that both male and female Hispanics earn about 4% more per hour than do blacks, and that the yearly differential increases to 45% and 17% for Hispanic men and women, respectively, over their black counterparts.[16]

In place of simple unadjusted mean earnings gaps, a more sophisticated analysis considers two additional factors: The earnings differences that would exist if, first, both cohorts under consideration had the same

Table 10

Comparison of Rate of Return Estimates for LNWAGE and LNERN Models
(percentages)

	Men			Women		
Study	Hispanic	Mexican	White	Hispanic	Mexican	White
LNWAGE						
Myers and King	1.7	1.5	3.8	3.2	3.1	7.1
Reimers (1980)	4.6[a]	5.3	6.4	3.7	4.2	8.1
Borjas (1981)	3.2[a]	2.7	—	—	—	—
LNERN						
Myers and King	6.6	5.9	10.0	5.0	2.3	15.8
Borjas (1981)	5.5[a]	5.3	—	—	—	—
Carliner (1976)	5.9[a]	4.9	6.9	—	—	—
Tienda and Neidert (1981)	6.0–8.6[a]	6.2–7.7	—	—	—	—

[a] The overall Hispanic estimate is calculated from the results for particular Hispanic-origin groups. It is calculated as $\sum_{j=1}^{n} w_i e_i / \sum_{j=1}^{n} w_i$, where e_i is the appropriate estimate and w_i is the sample size of each of n Hispanic-origin groups. While there are some problems with this approach, it does allow for a convenient summary.

Table 11

Hourly and Annual Earnings Gaps among Hispanic, Black, and White Youth

	White/Hispanic		Hispanic/Black	
	Unadjusted[a]	Adjusted[b]	Unadjusted[a]	Adjusted[b]
LNWAGE				
Men	.116	.067	.041	.093
Women	.010	-.009	.041	.010
LNERN				
Men	.271	.136	.448	.650
Women	.197	.013	.174	-.069

[a] The unadjusted gap is calculated as $e^D - 1$, where $D = \bar{Y}_A - \bar{Y}_B$ and $\bar{Y}_i$ is the mean of the appropriate log earnings measure for group i. Column 1 has $D = \bar{Y}_W - \bar{Y}_H$ and column 2 has $D = \bar{Y}_H - \bar{Y}_B$.

[b] The adjusted gaps are $\bar{X}_H(b_W - b_H)$ and $\bar{X}_B(b_H - b_B)$ for columns 2 and 4 respectively.

observed mean characteristics, and second, if both cohorts faced identical structures. Thus, disparity in earnings may come from two sources—differences in distribution, and discrimination.[17]

In Table 11 we calculate an unadjusted gap as a function of $\bar{Y}_A - \bar{Y}_B$, where $\bar{Y}_i$ is the mean (in logs) of the appropriate earnings measure for group i. If X_i is a vector of mean characteristics of group i (i = H for Hispanics, B for blacks, and W for whites) and b_i is the corresponding vector of regression coefficients, then we can write (via the normal equations):

$$\bar{Y}_H = \bar{X}_H b_H \qquad (1)$$

$$\bar{Y}_B = \bar{X}_B b_B$$

$$\bar{Y}_W = \bar{X}_W b_W.$$

Under the hypothesis that cohort A is being treated differently from cohort B, we would like to know how their earnings would change if they were treated the same as cohort B—that is, what they would earn if they (cohort A) faced B's wage structure. For example, let cohort A be Hispanics and cohort B be whites. If Hispanics faced the white wage structure they would earn

$$\hat{Y}_H = \bar{X}_H b_W, \qquad (2)$$

and the difference in earnings between what they earn and what they could earn is given by

$$\hat{Y}_H - \bar{Y}_H = \bar{X}_H(b_W - b_H). \qquad (3)$$

The difference between what whites actually earn and what Hispanics could earn is given by

$$\bar{Y}_W - \hat{Y}_H = (\bar{X}_W - \bar{X}_H)b_W. \qquad (4)$$

The term in (3) reflects unequal rewards to like individuals (a measure of discrimination) and the term in (4) reflects equal rewards as applied to unlike individuals (a measure of differences in distribution). Finally, the "gap" can be reported in dual fashion as:

$$(5) \qquad \bar{Y}_W - \bar{Y}_H = (\bar{Y}_W - \hat{Y}_H) + (\hat{Y}_H - \bar{Y}_H)$$
$$= (\bar{X}_W - \bar{X}_H)b_W + \bar{X}_H(b_W - b_H).$$

What we seek to explain is the white/Hispanic gap (as well as the Hispanic/black gap) after the effects of differences in distributional characteristics are removed. That which remains can be assumed to be an upper limit of the extent of discrimination in earnings. The "adjusted" earnings gaps are also presented in Table 11.

We note from Table 11 that Hispanic males would earn about 7% more per hour and 14% more per year if they faced the white male earnings structures. To the extent that we can argue that discrimination is the reason for differences in earnings structure, we can use our calculated 7% hourly wage differential as a measure of labor market discrimination against Hispanic men. It is less clear whether we could use the 14% yearly differential as a discrimination measure, since that magnitude is a function of labor supply as well as hourly wages. Thus, we would have to have more information regarding the reasons for labor supply differences in that case. When we investigate the adjusted female white/Hispanic earnings gaps, we see that they are virtually nonexistent. Our analysis therefore implies that Hispanic women face no more labor market discrimination than do white women.

We find that black men would be better off if they faced the Hispanic wage and earnings structures. The Hispanic/black adjusted LNWAGE differential is about 9%, and the yearly earnings difference is 65%. In other words, if black men faced the Hispanic earnings structure (a function of hourly earnings and labor supply), their annual earnings would increase by 65%.[18] When we turn our attention to the young women, we again see little difference in the calculated wage gap—a 1% advantage for Hispanic women with respect to black women. The yearly earnings difference, on the other hand, is about 7% in favor of black women.[19]

SUMMARY AND CONCLUSIONS

Before adjusting for differences among the cohorts, we find Hispanics falling between whites (at the high end) and blacks (at the low end) in terms of hourly and yearly earnings. After adjusting for differences, we continue to find Hispanics falling between whites and blacks, but closer to the whites. When we look for differences between the cohorts, we find education looming large. Among employed male Hispanic youth, almost three-fifths are high school dropouts; among Hispanic women, over one-third failed to complete high school.

Turning to some generalizations regarding the determination of the financial success of Hispanics, we find that the higher dropout rates of Hispanics may be explained in part by the lower benefits of education for Hispanic youth *vis-à-vis* blacks and whites. (That is, Hispanic high school dropouts face lower market penalties than black and white dropouts, and Hispanic males who have attended college have lower returns than blacks or whites.) Reimers (1980) and Carliner (1976) also found that Hispanics have lower rates of return to education than whites. However, we do find that years of schooling play a fairly sizable role in Hispanic earnings, especially the yearly measure of earnings.

Our three measures of experience have mixed results for the Hispanic cohorts. While post-school experience proves to be an important determinant of earnings, months of service with the current employer has little effect. In-school work experience has positive effects in the yearly earnings equations, but shows little in the equation explaining hourly earnings. Our two measures of post-school training have mixed results. While the impact of training is generally small, it is a significant determinant of hourly earnings for men (but not for Mexican-origin men). Another factor—the extent of occupational knowledge possessed by the respondent—is not generally significant except in the analysis of yearly earnings.

The results of the geographic variables are generally in the expected direction. Those residing in the South or in high unemployment rate areas do worse than others, while those in urban areas do not differ significantly. Surprisingly, little evidence was found to show that Hispanics with language difficulties or who were residing outside the United States at age fourteen are any worse off than their counterparts. And, finally, we note that married men do have higher earnings (hourly and yearly) than unmarried Hispanic men, other things equal.

In the analysis, we find that Hispanic males would earn about 7% more per hour and 14% more per year if they faced the white male earnings structures. To the extent that we can argue that discrimination is the reason for differences in earnings structures, we can use the calculated 7% hourly wage differential as a measure of labor market discrimination against Hispanic males. When we investigate white/Hispanic earnings gaps among the women, we find that they are virtually nonexistent. Our analysis therefore implies that Hispanic women face no more labor market discrimination than do white women.

This study represents an attempt to highlight the labor market position of Hispanic youth in a broad context. The size of the task we set out to accomplish required the sacrifice of more detailed investigation of many aspects. Nevertheless, some specific conclusions and recommendations are possible.

We have shown that considerable difference in educational attainment exists. The reasons for this are unclear. A lack of equal opportunity or access to schooling, inefficient or ineffective educational delivery systems to Hispanics, or lack of incentives to invest in human capital on the part of Hispanic youth would each contribute to the observed lower educational levels of Hispanics. Additionally, Hispanic immigrants are likely to have relatively fewer years of education than natives, which would exacerbate the educational differences between Hispanics and whites. In any event, the issue of the disparity in educational attainment among youth ought to occupy a high priority in future work.

Despite mixed results in our various measures of experience one should not downplay the important role of work experience to labor market success. The sometimes negative results of tenure may actually reflect a lack of job mobility due to a lack of opportunities or labor market information. That is, a certain amount of "job hopping" may have beneficial effects for young workers. Further, the results show that those minorities (Hispanic and black) who gain experience by working while enrolled in school are rewarded in terms of annual earnings, presumably through their increased labor supply. This result, combined with the apparent need to increase levels of education of Hispanic youth, suggests considerable potential for cooperative (work combined with schooling) approaches to education, or at least indicates the value of working while in school.

NOTES

[1] The median age for whites is 31.3 years, the median age for both blacks and Hispanics is 23.2 years. Also, the under-15-years-of-age rate is highest for Hispanics (32%) and lowest for whites (21.3%). In addition, less than 5% of Hispanics in the United States are over 65 years of age, while over 12% of whites are (1980 Census as reported in Scientific American, November 1981, p. 61).

[2] This paper is one chapter of a larger study of the labor market outcomes of Hispanic youth (Myers et al., 1982).

[3] Use of hourly earnings as a measure is much "cleaner" econometrically, since it does not involve the labor supply decision of hours worked per year. That is, measures such as annual earnings are sensitive to differences in hours and weeks of work, which are themselves dependent upon hourly earnings. Nevertheless, an analysis of yearly earnings generates much interest and policy significance, since it is this magnitude that primarily determines living standards.

[4] See Borus et al. (1979) for a descriptive analysis of the NLS data.

[5] The measure of "Hispanic" used in this study comes from a two-part identification. First, the respondent is asked to self-identify with one of 15 ethnic origins, including Mexican-American, Chicano, Mexican, Mexicano/Cuban, Cubano/Puerto Rican, Puertoriqueno, Boricua/Latino, Other Latin American, Hispano, or Spanish descent. If the respondent chooses one of the above, then he or she is coded as "Hispanic." Second, if after this self-identification the respondent remains unclassified as Hispanic, but reports that Spanish was spoken in his or her household when the respondent "was a child," and the surname corresponds to a

Census-derived list of Spanish surnames, then the respondent is coded as "Hispanic." The remaining respondents are coded as blacks or "others." We have purged the "other" group of the non-Hispanic, nonblack, nonwhite respondents to retain only a non-Hispanic white group.

[6] We calculate an adjusted annual earnings measure by multiplying the respondent's usual hours of work per week by weeks worked in the past year by average hourly earnings. Since the past-year reference period varies among individuals (it is actually weeks worked from January 1, 1978, to the interview date), we adjusted all periods to a 52-week base. For example, if an individual worked 75% of all available weeks from 1/1/78, to, say, 4/14/79 (the date of the interview), we count that person as having worked 39 weeks (.75 x 52) in the past year.

[7] For a discussion of the KWW ability relationship, see Parnes and Kohen (1975), Griliches (1976), and Lazear (1977). Nevertheless, we are unable here to separate the effects of occupational information from those of ability.

[8] For the purposes of this report, residence outside the 50 states and the District of Columbia is considered to be outside the United States, even though areas such as Puerto Rico and Guam are U.S. commonwealths or territories.

[9] All models were run with B_FOR, but are not reported here. In those runs: (1) no coefficient except FOR_14 changed significantly, and (2) B_FOR was rarely significant. Due to the high degree of collinearity, we include only FOR_14 and the expected sign is negative.

[10] Sample sizes in the Mexican equations are already perilously low. The most serious problem with small sample sizes in models with a large

number of independent variables is that standard errors become large and statistical significance falls. The coefficient estimates remain unbiased under classical assumptions on the error term.

[11] It should be noted that the base from which we calculate these "dropout rates" is composed of nonenrolled individuals, 16 to 22 years of age. Since we are excluding here those who are enrolled in school, the dropout rate is considerably higher than those calculated on a full age sample.

[12] In this paper we are using $\alpha \leq .10$ as our measure of statistical significance. When we use one-tailed tests (the hypothesized direction of the variables are listed in Table 1), t-values of 1.28 or larger in the expected direction are considered statistically significant. For the two-tailed tests to be statistically significant, the absolute value for the t-statistic must be at least 1.64.

[13] See Becker (1975), Mincer (1974), or Griliches (1976). Examples of this phenomenon include apprentices in the building trades and graduate teaching assistants, both of whom are trading off current wages for current OJT and higher subsequent earning power.

[14] Neidert and Tienda (1981) examine five different models of the relationship between education and earnings for Hispanic males. They find that while the linear (or continous education model) "provides the best fit to the data,...the [other] models are superior for providing new insights..." (p. 164).

[15] The estimates presented were selected for their comparability to our estimates and do not necessarily reflect the authors' "best estimate." For example, Reimers (1980) offers estimates corrected for

selectivity bias, which we do not present. In every case, the estimate for "Hispanic" is a weighted average of separate estimates on various Hispanic-origin groups (e.g., Mexican, Puerto Rican, etc.).

[16] These high yearly differentials between Hispanics and blacks can be seen in Table 6 as most directly related to relatively low average annual hours worked.

[17] See Tienda (1981b) and Reimers (1980) for similar analyses. Whereas Tienda investigates gaps in annual earnings, Reimers investigates differences in log wages. Both have full-age samples, but Tienda analyzes only men.

[18] See note 16. Note also from Table 7 the considerably greater penalties to blacks than to Hispanics of dropping out of high school, especially for ED 0-8 (-.368 for Hispanics, -.790 for blacks).

[19] It must be borne in mind that this finding is not inconsistent with the observation that Hispanic women earn more per hour and work more annual hours than do their black counterparts. The earnings structure is the result of a complex of interactions, as noted above. One factor we note from comparing Hispanic and black female earnings regressions that at least partly explains the 7% finding is that, in our sample, 15% of Hispanic women completed less than 9 years of schooling, as compared to 0% for black women. Further, Hispanic women who completed only 0-8 years of schooling earned 19% less per year, *ceteris paribus*, than Hispanic women with a high school diploma.

REFERENCES

Antos, Joseph R. and Wesley S. Mellow. 1978. The youth labor market: A dynamic overview. Final Report to the U.S. Department of Labor, Bureau of Labor Statistics, Washington, D.C.

Becker, Gary S., ed. 1975. Human capital. 2nd ed. New York: Columbia University Press.

Becker, Gary S., and Barry R. Chiswick. 1966. Education and the distribution of earnings. American Economic Review, 56, 358-369.

Borjas, George J. 1981. Hispanic immigrants in the U.S. labor market: An empirical analysis. In Marta Tienda, ed., Hispanic origin workers in the U.S. labor market. Final Report to the U.S. Department of Labor. Madison: University of Wisconsin.

Borus, Michael E., Joan E. Crowley, Russell W. Rumberger, Richard Santos, and David Shapiro. 1980. Pathways to the future: A longitudinal study of young Americans. Preliminary report: Youth and the labor market - 1979. Columbus: Ohio State University, Center for Human Resource Research.

Briggs, V.M., Jr., W. Fogel, and F.H. Schmidt. 1977. The Chicano worker. Austin: University of Texas Press.

Carliner, Geoffrey. 1976. Returns to education for blacks, Anglos, and five Spanish groups. Journal of Human Resources, 11, 172-184.

Chiswick, Barry R. 1978. The effect of Americanization on the earnings of foreign-born men. Journal of Political Economy, 86, 897-922.

Fogel, W. 1966. The effect of low educational attainment on incomes: A comparative study of selected ethnic groups. Journal of Human Resources, 1, 22-40.

Freeman, Richard B. 1976. *The over-educated American*. New York: Academic Press.

Grasso, J.T., and Steven C. Myers. 1977. The labor market effects of investment in human capital. In A.I. Kohen, J.T. Grasso, S.C. Myers, and P.M. Shields, eds., *Career thresholds*. Vol. 6. Columbus: Ohio State University, Center for Human Resource Research.

Griliches, Zvi. 1976. Wages of very young men. *Journal of Political Economy*, *84*, S69-85.

Griliches, Zvi. 1980. Schooling interruption, work while in school, and the returns from schooling. *Scandinavian Journal of Economics*, *82*. 291-303.

King, Randall H. 1978. The labor market consequences of dropping out of high school. Ph.D. diss., The Ohio State University, Center for Human Resource Research.

King, Randall H. 1980. Some further evidence on the rate of return to schooling and the business cycle. *Journal of Human Resources*, *15*, 264-272.

Lazear, E. 1977. Education: Consumption or production? *Journal of Political Economy*, *85*, 569-597.

Leibowitz, Arleen. 1976. Years and intensity of schooling investment. *American Economic Review*, *66*, 321-334.

Marhsall, F.R., A.G. King, and V.M. Briggs, eds. 1980. *Labor economics: Wages, employment, and trade unionism*. 4th ed. Homewood, Ill: Richard D. Irwin.

Mincer, Jacob. 1974. *Schooling, experience and earnings*. New York: Columbia University Press, for the National Bureau of Economic Research.

Myers, Steven C. 1980. Working in college: Risk or return? Ph.D diss., Ohio State University, Center for Human Resource Research.

Myers, Steven C., Dennis M. Byrne, Randall H. King, and Richard W. Stratton. 1982. *Employment outcomes of Hispanic youth: An analysis of labor market behavior*. Final Report to the U.S. Department of Labor. Akron: The University of Akron, March.

Neidert, Lisa J., and Marta Tienda. 1981. Converting education into earnings: The patterns among Hispanic origin men. In Marta Tienda, ed., *Hispanic origin workers in the U.S. labor market*. Final Report to the Department of Labor. Madison: University of Wisconsin, October.

Newman, M. 1978. A profile of Hispanics in the U.S. work force. *Monthly Labor Review*, *101* (December), 3-14.

Parnes, Herbert S., and Andrew I. Kohen. 1975. Occupational information and labor market status: The case of young men. *Journal of Human Resources*, *10*, 44-55.

Polachek, Solomon W. 1981. Occupational self-selection: A human capital approach to sex differences in occupational structure. *Review of Economics and Statistics*, 60-69.

Reimers, Cordelia. 1980. Sources of the wage gap between Hispanic and other white Americans. Working Paper, no. 139, Woodrow Wilson School, Princeton University.

Tienda, Marta, ed. 1981a. *Hispanic origin workers in the U.S. labor market*. Final Report to the U.S. Department of Labor. Madison: University of Wisconsin, October.

Tienda, Marta. 1981b. Nationality and income attainment among native and immigrant Hispanics in the U.S. In Marta Tienda, ed., Hispanic origin workers in the U.S. Labor Market. Final Report to the U.S. Department of Labor. Madison: University of Wisconsin, October.

Tienda, Marta, and Lisa J. Neidert. 1981. Market structure and earnings determination of native and immigrant Hispanics in the U.S. In Marta Tienda, ed., Hispanic origin workers in the U.S. labor market. Final Report to the U.S. Department of Labor. Madison: University of Wisconsin, October.

Section II: Unemployment

JUL 16 1984

Ethnic Differentials in Unemployment Among Hispanic Americans

Gregory DeFreitas
Department of Economics
Barnard College
Columbia University

I am indebted to Jacob Mincer, Orley Ashenfelter, Robert Mare, Finis Welch, and Barry Chiswick for their comments and suggestions on earlier drafts. I am also grateful to Machiko Osawa for research assistance. This research was supported by the National Institute of Child Health and Human Development, Grant No. 1-R01-HD-15435-01.

Ethnic Differentials in Unemployment

Among Hispanic Americans

Throughout the recent past, the unemployment rate of the Hispanic labor force has persistently exceeded the national average. In 1980, when 6.1% of white men were out of work, the annual rate for Hispanic men was 9.7% (see Table 1).[1] Among Hispanics, there are marked differences across ethnic groups, ranging in 1980 from a low of 8.9% of Cubans jobless to a high of 13.1% for Puerto Rican men. Unemployment among black men was, at 13.2%, well above either white or Hispanic levels, and the high black jobless rate has been the subject of some, though still too little, analysis by economists (see, e.g., Gilroy, 1974; Flanagan, 1978). Far less research has been done on the disproportionate share of unemployment experienced by Spanish-origin workers, despite their fast-growing importance in particular urban and regional labor markets[2] and despite the increased availability of relevant national data sets since the mid-1970s.[3]

The purpose of this study is to examine differences in both the incidence and duration of unemployment among Hispanic men. Comparisons are also made between Hispanics and non-Hispanics. Among the most important questions to be addressed are the following:

1. Can the higher unemployment rates of Hispanic ethnic groups be largely attributed to more frequent spells of unemployment or to the longer duration of those spells?

Table 1

Unemployment Rates of Men 16 Years and Over by Race and Hispanic Ethnic Group, 1976-1980

	1976	1977	1978	1979	1980
All Whites	6.4%	5.5%	4.5%	4.4%	6.1%
All Hispanics	10.8	9.0	7.6	6.9	9.7
Mexican	9.9	8.5	7.0	6.5	9.6
Puerto Rican	15.7	13.7	12.4	11.4	13.1
Cuban	12.5	7.6	6.7	6.1	8.9

Source: U.S. Bureau of Labor Statistics, unpublished tabulations.

2. Do ethnic groups differ in the relative importance of human capital variables—such as education, fluency in English, and work experience—as determinants of the probability and duration of joblessness?
3. Are there substantial differences among the ethnic groups in the impacts of such structural factors as local labor market conditions, industry of employment, and occupation?
4. Are Hispanic immigrants particularly prone to frequent and/or lengthy spells of unemployment, at least during their first few years of adjustment to U.S. labor markets? If so, to what extent can the sizable numbers of recent immigrants among certain ethnic groups account for the unemployment levels of those groups?

The data base, principal variables of interest and the economic rationale behind their selection, and the empirical methodology are discussed in the following section. In the subsequent section we first present summary statistics on various dimensions of unemployment, including spells and duration, as well as quit and layoff rates, for the sample stratified by ethnic group, nativity, age, and geographic region. Maximum likelihood logit analysis of the determinants of the probability of unemployment in 1975 is then conducted for individual Hispanic ethnic groups as well as for white non-Hispanics. To control for the possible confounding effects of divergent patterns of settlement across the country, separate regional analyses are also conducted. Next, differences in the probability of multiple spells of unemployment are examined, again using logit estimation techniques. Then, ordinary least squares estimates of the determinants of the duration of unemployment are presented for both the national sample and a regional subsample. In the next section, differences in the likelihood of unemployment between Hispanics and non-Hispanics are decomposed into portions attributable to differences in schooling, job characteristics, and labor market treatment. The separate strands of the analysis are drawn together in the last section.

DATA, VARIABLES, AND METHODOLOGY

The empirical analysis employs data from the 1976 Survey of Income and Education (SIE). This survey is an expanded version of the Current Population Survey conducted nationwide, mostly in May and June of 1976, which oversampled Hispanics and which contains a wealth of demographic, immigration, and labor market information relevant to our topic. From the complete file of 151,170 households, a subfile of individuals aged 14 and over was extracted which included all persons self-identified as being of Hispanic origin plus a random sample of white non-Hispanics. The study sample was restricted to men who reported their ethnic group or place of birth, who were not full-time students or self-employed, and who worked for pay at some time in 1975.

To investigate differences in the incidence of unemployment, the following unemployment probability function is estimated separately by ethnic group:

$$\text{(1)}\quad P(\text{UNEMP75}=1) = f(\text{EDFOR, EDUS, EX, EXSQ, MSP, CHILD5, CHILD517, HEALTH, IMM7475, IMM7073, IMM6569, IMM6064, IMMPRE60, NONWHITE, FLUENT, OTHINC, PARTTIME, UNRATE, OCC, IND, HISPROP}),$$

where UNEMP75 = 1 if unemployed one week or more in 1975, 0 otherwise. All other variables are defined in Table 2. The effects of the independent variables given above on two other dependent variables, the probability of more than one spell of unemployment during the year (SPELLGT1) and the total number of weeks of unemployment in 1975 (WKSUN75) will also be explored. Both UNEMP75 and WKSUN75 are constructed from responses to the survey question item: "You said (household member) worked about __ weeks in 1975. How many of the remaining weeks was (household member) looking for work or on layoff from job?" Interviewers were instructed to ask the question only of those individuals who worked fewer than 50 weeks that year.[4]

Predicting the signs of all the explanatory variables is particularly difficult in the probability of unemployment equations because the dependent variable includes both the probability of quitting and the probability of being laid off. However, with unemployment in 1975 at a postwar high and layoffs accounting for an unusually large share of all joblessness, the unemployment variable is doubtless weighted toward the layoff rather than the quit dimension. In light of this, previous theoretical and empirical work enables us to speculate on the probable effects of a number of the independent variables.

Most of the relatively few recent studies on Hispanic unemployment have stressed the importance of ethnic differences in age, schooling, immigration patterns, and occupation or industry of employment (e.g., Gray, 1975a, 1975b; Newman, 1978; Piore, 1978). Insofar as older workers represent a larger investment in firm-specific capital by the employer, such workers would be less vulnerable to layoffs than younger individuals.

Table 2

List of Variables

Variable	Definition
UNEMP75	1 if out of work and looking for a job or on layoff 1 week or more in 1975; 0 otherwise.
SPELLGT1	1 if more than 1 stretch of time spent looking for work in 1975; 0 otherwise.
WKSUN75	Number of weeks looking for work or on layoff in 1975.
EDFOR	Years of schooling completed abroad.
EDUS	Years of schooling completed after moving to U.S. (total years of schooling minus EDFOR).
EX	Potential labor market experience (age minus total years of schooling minus six).
EXSQ	Potential labor market experience, squared.
MSP	1 if married, spouse present; 0 otherwise.
CHILD5	Number of children in family under 5 years old.
CHILD517	Number of children in family ages 5 to 17.
HEALTH	1 if amount or kind of work limited by health; 0 otherwise.
IMM7475	1 if foreign-born and moved to U.S. 1974 or after; 0 otherwise.
IMM7073	1 if foreign-born and moved to U.S. 1970-73; 0 otherwise.
IMM6569	1 if foreign-born and moved to U.S. 1965-69; 0 otherwise.
IMM6064	1 if foreign-born and moved to U.S. 1960-64; 0 otherwise.
IMMPRE60	1 if foreign-born and moved to U.S. before 1960; 0 otherwise.

(table continues)

Table 2 (cont.)

List of Variables

Variable	Definition
NONWHITE	1 if nonwhite; 0 otherwise.
FLUENT	1 if speaks and understands English very well; 0 otherwise.
OTHINC	Other family income, excluding labor earnings and unemployment benefits (respondent and spouse), and earnings-related transfers.
PARTTIME	1 if worked fewer than 35 hours/week when employed in 1975; 0 otherwise.
UNRATE	Annual unemployment rate for SMSA of residence or SMSA.
OCC	1 if employed as craftsman, operative, laborer or service worker on longest job in 1975; 0 otherwise.
IND	1 if employed in durable manufacturing or construction industries on longest job in 1975; 0 otherwise.
HISPROP	Percentage of state population Hispanic.
UI	1 if received any unemployment compensation in 1975; 0 otherwise.

Likewise, the greater the volume of worker-financed specific capital, the lower the probability of quitting.[5] Education and proxies for on-the-job training, such as experience and tenure with the firm, are usually viewed as increasing specific capital. We would thus expect years of schooling completed to be negatively related to the probability of being unemployed one or more times. To distinguish between the effects of foreign and U.S. schooling, educational attainment was divided into premigration (EDFOR) and postmigration (EDUS) components. The effects of these same variables on the duration of joblessness are ambiguous. On the one hand, better-educated, more highly skilled individuals may have higher expected returns from job search, thus lengthening unemployment spells. However, search costs are also higher for those with more firm-specific capital, and these individuals may also be more efficient in their use of search techniques. The latter considerations would seem more compelling in slack labor markets, suggesting a negative relationship between education, experience, and duration.[6]

The implications of migratory differences across groups are even less obvious. Recent immigrants may be at some disadvantage in the labor market relative to earlier immigrants and the native-born due to a smaller stock of U.S. labor market information, language problems, the imperfect international mobility of skills, and a variety of legal restrictions on the employment of aliens in certain fields. Chiswick (1978b, 1982) suggests that their quit rates may be high, at least in the initial adjustment period, as they engage in occupational, industrial, and geographic mobility in search of labor market information and job opportunities. Writing from a labor market segmentation perspective, Piore (1979) argues that recent immigrants are among those most likely to be confined to the typically unstable, low-skill jobs common in secondary sector industries. Relatively high rates of job turnover and unemployment, generated by both supply and demand forces, may thus be expected for recent cohorts.

On the other hand, much of the sociological literature on immigrants has stressed their high motivation to locate jobs quickly in order to end dependence on friends and relatives, to begin accumulating savings for self-support and to remit to their families at origin, and to acquire U.S.-specific and firm-specific training. Kinship networks already established at destination may play an important role in advising on the optimal timing of the immigration, arranging initial housing accommodations, social contacts, and assistance in job search (see, e.g., Levy and Wadycki, 1973; Rogg and Cooney, 1980; Tienda, 1980). Prior migrants thus reduce the economic and psychic costs of immigration as well as accelerate the newcomer's successful entry into the job market. The relatively rapid earnings progress of most foreign-born groups relative to their native-born counterparts (Chiswick, 1978a, 1979b) likewise suggests that the initial employment disadvantages are typically overcome after an adjustment period of variable length. Among Hispanic immigrants, the unemployment experience of two ethnic groups are especially difficult to predict. Research on Cubans by Chiswick (1978a), Borjas (1982), and Reimers (1980) has pointed to the different earnings patterns of political refugees and economic migrants. The suddenness of most Cuban emigration prevented much premigration job search, and the steep downward occupational mobility many appear to undergo upon arrival may cause job dissatisfaction and a preference for general human capital investments to improve future occupational prospects over firm-specific investments, at least in the initial period after arrival.[7] The result may be high quit and/or layoff rates. Puerto Rican-born men are not formally classifiable as immigrants because they are U.S. citizens and are not impeded by legal restrictions on entry or exit from the United States. Whether they nonetheless have unemployment experiences similar to other Hispanics born outside the United States is a matter for empirical analysis.

To control for industrial characteristics, a dichotomous variable (IND) is set equal to 1 if the respondent's longest recent job was in the durable manufacturing or construction industries. In the course of 1975, durable goods manufacturers, led by auto and related industries, experienced the largest absolute employment reduction of any industrial group, accounting for two-thirds of the overall drop in manufacturing employment. The highest unemployment rate of any single industry (18.1% on an annual basis) was in contract construction, where the work force was cut sharply as housing starts plummeted with the tightening of the money market (St. Marie and Bednarzik, 1976). Although joblessness in white collar occupations reached postwar highs, semiskilled and unskilled workers were, as in previous recessions, the most vulnerable to cyclical fluctuations (St. Marie and Bednarzik, 1976; Cohen and Gruber, 1970). The dummy variable OCC equals 1 if employed in craft, operative, service, laborer, or farm occupations, 0 otherwise. A dummy variable was also included for part-time employment (PARTTIME), which is likely to be especially unstable, characterized as it is by few seniority or union protections against layoffs and by employer' perceptions of part-time workers as especially quit-prone.

Three approaches were adopted to take into account the markedly different regional distributions of various ethnic groups. First, the annual unemployment rate of the SMSA (Standard Metropolitan Statistical Area) of residence or the nearest SMSA (UNRATE) was included in all regressions.[8] The reduced number of vacancies and increased costs of search in slack labor markets are likely to be associated with increased layoffs, falling quit rates, and, among the unemployed, longer-duration joblessness. Second, in an effort to test the common view that the "crowding" of Hispanic workers in particular areas restricts local employment opportunities, the variable HISPROP was defined as the proportion of Hispanics in each state's population. Finally, where sample size permitted, separate regressions were run for particular regions of the country with high concentrations of Hispanic residents.

Although recent research indicates that black workers tend to have lower quit rates than whites with similar personal and job characteristics (Blau and Kahn, 1981b), insofar as employers perceive them as high turnover workers the employers will be less willing to finance firm-specific capital. Together with discriminatory factors, this would tend to increase the vulnerability of nonwhites to layoffs.

Finally, controls were included for two types of income: nonlabor income (OTHINC) and unemployment insurance (UI). The probable effects of nonlabor income on the incidence of unemployment are not apparent, a priori. But to the extent that such income can be used to finance extended job search, it may be positively related to the duration of unemployment. Likewise, a number of studies have found a positive correlation between the receipt of unemployment benefits and duration.[9] A dichotomous variable (UI), set equal to 1 if the individual received unemployment insurance in 1975, has thus been included in the duration equations.

EMPIRICAL RESULTS

The summary statistics presented in Table 3 reveal striking differences between Hispanics and non-Hispanic whites, as well as among Hispanic ethnic groups, in a number of characteristics. With an average of less than 10 years of schooling, Mexican and Puerto Rican men are 3 years below the non-Hispanic level and 1 to 2 years below the other Hispanic groups. Cubans are, on average, older (mean age: 41 years[10]), with more work experience than any other group, but much of that work experience was in the Cuban labor market--about 95% of the Cubans were foreign-born, and nearly 42% had been in the United States 10 years or less by 1975. Central and South Americans are even more recent immigrants: 39.2% arrived in the 1970s and another 24.7% in the period 1965-69. Less than one-fourth of all Puerto Rican men were born on the U.S. mainland. In contrast, 74.5% of those of Mexican origin and 87% of the "other Hispanics" were native-born (i.e., U.S.-born).[11]

In light of the high proportions of Puerto Ricans, Cubans, and Central and South Americans born abroad, it is not surprising to find that the majority of their schooling took place in their countries of origin and that many lack fluency in English. In fact, only 42% of Cubans and somewhat more than one-half of Puerto Ricans and Central and South

Table 3

Means of Explanatory Variables among Men in Various Ethnic Groups

Variable	White Non-Hispanic	Mexican	Puerto Rican	Cuban	Central & South American	Other Hispanic
EDFOR	1.137	1.237	5.019	8.764	9.572	1.146
	(3.458)	(2.847)	(4.677)	(4.909)	(6.010)	(3.474)
EDUS	11.350	8.360	4.729	2.717	2.497	10.049
	(4.476)	(5.130)	(5.555)	(4.321)	(4.459)	(4.497)
EX	20.960	18.770	20.222	23.696	18.868	21.401
	(15.753)	(14.883)	(13.705)	(14.370)	(11.423)	(15.943)
EXSQ	687.065	575.990	607.220	774.699	483.414	703.576
	(824.641)	(793.396)	(701.534)	(741.162)	(535.978)	(848.661)
MSP	.745	.700	.771	.739	.687	.728
	(.436)	(.458)	(.421)	(.441)	(.465)	(.445)
CHILD5	.221	.457	.356	.180	.380	.254
	(.519)	(.740)	(.619)	(.446)	(.618)	(.548)
CHILD517	.889	1.385	1.111	.919	.795	1.103
	(1.248)	(1.633)	(1.384)	(1.178)	(1.168)	(1.434)
HEALTH	.079	.079	.070	.062	.042	.075
	(.271)	(.269)	(.255)	(.242)	(.202)	(.263)
IMM7475	.007	.029	.041	.037	.102	.004
	(.083)	(.169)	(.199)	(.190)	(.304)	(.060)
IMM7073	.012	.054	.092	.124	.289	.025
	(.109)	(.227)	(.290)	(.331)	(.455)	(.156)
IMM6569	.021	.048	.086	.255	.247	.037
	(.143)	(.213)	(.280)	(.437)	(.433)	(.190)
IMM6064	.015	.028	.102	.342	.139	.025
	(.129)	(.165)	(.303)	(.476)	(.347)	(.156)
IMMPRE60	.103	.097	.448	.186	.151	.043
	(.304)	(.295)	(.498)	(.391)	(.359)	(.202)

(table continues)

Table 3 (cont.)

Means of Explanatory Variables among Men in Various Ethnic Groups

Variable	White Non-Hispanic	Mexican	Puerto Rican	Cuban	Central & South American	Other Hispanic
NONWHITE	—	.022	.086	.037	.133	.050
	—	(.146)	(.280)	(.190)	(.340)	(.218)
FLUENT	.911	.671	.540	.422	.506	.792
	(.285)	(.470)	(.499)	(.496)	(.502)	(.406)
OTHINC	45.887	30.607	22.100	34.399	24.341	34.473
(00's)	(83.385)	(55.441)	(44.730)	(53.160)	(59.848)	(67.849)
PARTTIME	.094	.088	.060	.042	.053	.072
	(.292)	(.284)	(.237)	(.202)	(.225)	(.259)
UNRATE	8.322	8.144	9.486	10.947	9.635	8.780
	(2.254)	(2.561)	(1.658)	(2.023)	(1.919)	(2.040)
OCC	.576	.808	.806	.702	.729	.741
	(.494)	(.394)	(.396)	(.459)	(.446)	(.439)
IND	.276	.268	.329	.258	.306	.258
	(.442)	(.432)	(.463)	(.439)	(.462)	(.436)
HISPROP	3.080	12.741	4.299	5.533	5.628	15.284
	(4.923)	(9.400)	(3.425)	(2.859)	(5.190)	(14.089)
UI	.179	.185	.194	.162	.127	.172
	(.147)	(.388)	(.396)	(.369)	(.333)	(.378)
N	8,480	1,937	328	163	170	566

Note: Data base is the 1976 Survey of Income and Education. Standard deviations are in parentheses.

Americans could speak and understand English very well. Cuban and Central and South American immigrants are, however, far more likely than Puerto Ricans to have been drawn from the urban middle classes and skilled occupations of their homelands.[12]

These three groups tend to reside in labor markets with average unemployment rates well above those for the other groups. Whereas the majority of Mexicans and "other Hispanics" live in the Southwest and over two-fifths are outside metropolitan areas, over 80% of each of the other Hispanic groups reside in SMSAs, principally in the Northeast and, in the case of Cubans, in Florida. Puerto Ricans and Central and South Americans tend to be more concentrated in cyclical industries, and Puerto Ricans, as well as Mexicans, are far more likely than either non-Hispanics or the other Hispanic ethnic groups to be in low-wage occupations.

Table 4 provides information on various dimensions of unemployment for the sample, stratified by ethnicity, nativity, age, and region. Nationally, as well as within specific regions, Hispanics were substantially more likely to have been unemployed at some point in 1975 than non-Hispanic whites. Of the full Hispanic sample, 21.5% experienced joblessness compared with 14.8% of non-Hispanics. Within each of the two subpopulations, the foreign-born rate was somewhat above the native-born level, but the difference was statistically significant only for non-Hispanic whites. Among Hispanics, rates vary from 21 to 23% for Mexicans, Puerto Ricans, and Cubans to less than 18% for Central and South Americans and other Hispanics. Controlling for age, the ranking remains the same among prime-aged males, 35 to 54. When particular

Table 4

Selected Characteristics of Unemployment by Ethnicity, Nativity, and Region of Residence[a]

	Unemployed	Weeks Unemployed[b]	Multiple Spells	Weeks Out of Labor Force	Quits	Layoffs	Entrants
United States							
White Non-Hispanic	.149	17.71	.047	4.110	.007	.029	.015
Native	.145	17.58	.047	4.143	.007	.028	.015
Foreign	.167	18.78	.050	3.932	.005	.035	.012
Hispanic	.215	18.00	.073	4.313	.007	.047	.022
Native	.205	17.55	.079	4.869	.007	.042	.024
Foreign	.214	18.79	.061	3.322	.009	.056	.018
Mexican	.214	18.09	.079	4.859	.008	.045	.021
Puerto Rican	.228	18.82	.056	3.092	.014	.053	.025
Cuban	.228	19.82	.072	1.843	.012	.096	.024
Latin American[c]	.171	16.17	.035	3.083	.000	.041	.006
Other Hispanic	.179	16.69	.072	4.318	.002	.035	.025
35-54 Years Old							
White Non-Hispanic	.111	17.71	.034	1.111	.004	.025	.005
Mexican	.176	17.51	.062	2.563	.004	.037	.006
Puerto Rican	.207	18.62	.043	1.650	.007	.036	.014
Cuban	.195	24.35	.058	.058	.000	.103	.012
Latin American[c]	.127	16.30	.000	1.152	.000	.038	.000
Other Hispanic	.093	15.86	.036	1.671	.000	.018	.013
New York-New Jersey							
White Non-Hispanic	.143	22.72	.041	2.742	.002	.058	.019
Puerto Rican	.197	18.15	.038	2.748	.000	.030	.023
Cuban	.217	21.60	.044	2.087	.000	.065	.044
Latin American[c]	.230	17.71	.033	3.344	.000	.082	.000
Other Hispanic	.172	13.00	.035	3.035	.000	.035	.035
Southwest							
White Non-Hispanic	.127	17.11	.050	3.849	.010	.010	.014
Mexican	.200	18.11	.074	5.046	.007	.050	.024
Other Hispanic	.155	17.10	.078	4.267	.004	.042	.028

(table continues)

Table 4 (cont.)

Selected Characteristics of Unemployment by Ethnicity, Nativity, and Region of Residence[a]

	Unemployed	Weeks Unemployed[b]	Multiple Spells	Weeks Out of Labor Force	Quits	Layoffs	Entrants
Florida							
White Non-Hispanic	.161	17.67	.118	9.835	.011	.022	.032
Cuban	.279	21.76	.131	.775	.000	.164	.016

[a] Mean values of variables. All variables refer to 1975, except for quits, layoffs, and entrants which are for 1976.

[b] Sample restricted to men unemployed 1 week or more in 1975.

[c] Refers to Central and South America.

regions are examined separately, "other Hispanics" continue to have relatively low rates, but nearly 23% of Central and South Americans in New York or New Jersey SMSAs were unemployed, the highest level of any Hispanic group. Central and South Americans in this region are, on average, younger (mean age of 35.6 years), more likely to be recent immigrants, and more concentrated in unskilled and semiskilled occupations than other ethnic groups or than Central and South American men elsewhere in the country. The largest disparity in unemployment is in Florida, where Cubans were over 1.5 times as likely to be jobless than were non-Hispanic whites.

Turning to the key components of unemployment, the duration of time out of work averaged about 18 weeks for Hispanics and non-Hispanics alike. The importance of long-term joblessness is revealed by the finding that, among the unemployed, about 30% were without work for six months or more, regardless of ethnic groups. The higher Hispanic unemployment rate thus reflects more frequent spells: 13.5% of Hispanics had one spell and 7.3% had two or more, while the corresponding frequencies for non-Hispanics were 10.3% and 4.7%.[13] Whether one looks at figures adjusted or unadjusted for age differences, Cubans, Puerto Ricans, and Mexicans had the longest mean duration, while South Americans and other Hispanics are below even the white non-Hispanic level.[14] In contrast to the pattern for Mexicans and Cubans, the unemployment of Puerto Ricans appears to be concentrated in single rather than multiple spells. This may in part reflect labor market conditions in New York City and the higher unemployment benefits available there. This is borne out by the finding that, in New York and New Jersey SMSAs, all groups experienced above-average durations of joblessness but no more than 4% had multiple spells. The difference in spell length between Mexican and other Hispanic men observed in the national subsamples does not persist when we focus solely on the Southwest. In contrast, the duration differential between non-Hispanics and Cubans doubles when we shift from the national to the Florida subsample. The unemployment of Cubans is characterized by both longer and more frequent spells.

Despite a much higher incidence of unemployment, Hispanics appear no more likely than non-Hispanics to drop out of the labor force. Although the proportion of "discouraged workers" doubtless increased in all groups as the recession deepened, Puerto Ricans and Central and South American men averaged one week less spent out of the labor force than non-Hispanics, and Cubans had briefer spells of nonparticipation than any other group, both in the national and in the regional subsamples.

To explore further the determinants of unemployment associated with inter-job and inter-labor-force mobility, it would be most desirable to have comparable data on the relative frequencies of quits, layoffs, entrants, and reentrants for each ethnic group in 1975. Unfortunately, the only information in the SIE on specific reason for unemployment is for the survey week of 1976 and is restricted to those currently unemployed. However, since unemployment remained at historically high levels well into 1976 (unemployment in New York and in Florida still averaged above 10% that year), comparisons across ethnic groups by reason for unemployment in 1976 may give at least some indication of the previous year's pattern.

As one would expect in depressed labor markets, quit rates were low for all groups, with insignificant differences between native- and foreign-born men and among ethnic groups. The last two columns, however, reveal a tendency for most Hispanic groups to have higher probabilities of unemployment due to layoff and to labor market entry or reentry than non-Hispanic whites. By far the highest layoff rate observed was that of Cubans in Florida, who were almost 8 times as likely to be unemployed as a result of layoff than white non-Hispanics in that state.[15] This appears to be at least partly attributable to the high proportion of recent immigrants among the Cuban sample. Although the difference in layoff rates between native- and foreign-born Hispanics is relatively small and only significant at the .10 level, separate tabulations by immigration cohort (unadjusted for human capital or labor market variables) revealed that Mexicans, Puerto Ricans, and Cubans moving to the United States since 1965 average higher rates than earlier waves from their homeland or than non-Hispanics. In contrast, native-born Hispanics have higher unemployment due to labor market entry or reentry than the foreign-born; in fact, native-born Puerto Ricans have 3 times the rate of those born on the island.

Table 5 presents maximum likelihood logit estimates of selected coefficients in the unemployment probability equations for a pooled sample of white non-Hispanic and all Hispanic men, as well as estimates from regressions run separately on non-Hispanics and on Hispanics. In the pooled sample, both without controls for fluency in English and job and labor market factors (col. 1) and with such controls (col. 2), immigrant cohorts appear to have a probability of unemployment insignificantly different from that of native-born men. Once we disaggregate into separate non-Hispanic and Hispanic subsets, however, two patterns are revealed.

Table 5

Logit Estimates of Probability of Unemployment Equations, Non-Hispanic, Hispanic, and Pooled Hispanic/Non-Hispanic Men

Variable	White Non-Hispanic and All Hispanic		White Non-Hispanic	Hispanic
	(1)	(2)	(3)	(4)
IMM7475	.005 (.219)	.130 (.229)	.215 (.401)	-.207 (.284)
IMM7073	-.225 (.180)	-.198 (.189)	.169 (.302)	-.606** (.246)
IMM6569	-.204 (.166)	-.180 (.172)	.417* (.229)	-.859*** (.247)
IMM6064	-.226 (.184)	-.189 (.188)	-.090 (.287)	-.550** (.255)
IMMPRE60	.162 (.107)	-.139 (.111)	.442*** (.131)	-.254 (.182)
Mexican	-.017 (.071)	.188** (.083)	—	-.235 (.160)
Puerto Rican	.116 (.144)	.098 (.148)	—	—
Cuban	.470** (.207)	.409* (.211)	—	.347 (.246)
Central and South American	-.078 (.225)	-.136 (.229)	—	-.250 (.260)
Other Hispanic	.044 (.117)	.178 (.129)	—	-.235 (.160)
-2 x log likelihood	10020.71	9671.60	6857.58	3125.92
N	11,644	11,644	8,480	3,164

Source: 1976 Survey of Income and Education.

Note: Dependent variable is UNEMP75. Standard errors are in parentheses. The regressions in cols. (1), (3), and (4) include schooling, experience, marital status, number of children, health status and race variables. Puerto Ricans are the excluded group in col. (4). The regression in col. (2) also includes variables for part-time employment, non-labor income, Hispanic proportion of state population, occupation, industry, local employment rate, and fluency in English.

*Statistically significant at the 10% level.
**Statistically significant at the 5% level.
***Statistically significant at the 1% level.

In regressions without controls for English fluency or labor market characteristics, white non-Hispanics (col. 3) tend to have positive differentials relative to the native-born (though only the 1965-69 and pre-1960 cohort coefficients are significant), whereas Hispanic immigrants arriving between 1960 and 1973 have significantly lower probabilities of joblessness than native-born Hispanics with otherwise similar personal characteristics.

Among all men, Anglo and Hispanic, Cubans appear to have had a significantly greater likelihood of being unemployed in 1965 than white non-Hispanics (the excluded reference group), regardless of the specification used. Mexican men are also at a significant, though smaller, disadvantage once job and labor market factors are held constant (col. 2).

Table 6 presents maximum likelihood logit estimates of the unemployment probability equations for white non-Hispanics, all Hispanics, and individual Hispanic ethnic groups.[16] As expected, more highly educated individuals are less vulnerable to unemployment among all groups, although the coefficients are not statistically significant for Puerto Ricans and Cubans (whose extremely small sample size helps account for their relatively few significant coefficients). To the extent that schooling in the United States provides language training and country-specific labor market information, one might predict that EDUS would have a larger impact (in absolute value) than EDFOR, and this is the case for the pooled Hispanic, Mexican, and other Hispanic subsamples. Among non-Hispanic whites, Puerto Ricans, and Cubans, however, schooling prior to arrival appears to have a relatively stronger influence.[17]

Table 6

Logit Estimates of Probability of Unemployment Equations, White Non-Hispanic and Hispanic Men, by Ethnic Group

Variable	White Non-Hispanics	All Hispanics	Mexicans	Puerto Ricans	Cubans	Other Hispanics
EDFOR	-.120*** (.020)	-.078*** (.022)	-.125** (.037)	-.092 (.060)	-.042 (.074)	.093 (.071)
EDUS	-.098*** (.015)	-.120*** (.020)	-.156*** (.025)	-.069 (.066)	-.053 (.101)	-.106* (.054)
EX	-.041*** (.008)	-.060*** (.012)	-.052*** (.015)	-.144*** (.045)	-.035 (.067)	-.069** (.029)
EXSQ	.0002 (.0002)	.0004** (.0002)	.0000 (.0003)	.002*** (.0008)	.0004 (.001)	.0007 (.0005)
MSP	-.335*** (.091)	-.166 (.127)	-.061 (.165)	.079 (.417)	-.074 (.562)	-.425 (.330)
CHILD5	.003 (.066)	-.019 (.074)	-.048 (.087)	-.054 (.257)	-.760 (.684)	.146 (.239)
CHILD517	-.080*** (.028)	-.009 (.032)	-.049 (.039)	.105 (.111)	.027 (.181)	.081 (.086)
HEALTH	.341*** (.112)	.251 (.172)	.126 (.220)	.522 (.516)	1.042 (.813)	.330 (.430)
IMM7475	.364 (.416)	-.201 (.295)	-.776* (.401)	2.024** (.877)	-.364 (1.421)	-.245 (1.591)
IMM7073	.332 (.317)	-.689*** (.255)	-.793** (.359)	.228 (.700)	-1.765 (1.212)	-2.530** (1.133)
IMM6569	.499** (.241)	-.883*** (.253)	-1.034*** (.373)	1.208* (.676)	-1.674 (1.122)	-2.395** (1.080)
IMM6064	-.092 (.295)	-.509** (.259)	-.220 (.386)	.669 (.671)	-1.005 (1.082)	-2.117* (1.100)
IMMPRE60	.414*** (.140)	-.252 (.187)	-.141 (.254)	.569 (.469)	-.930 (1.075)	-.588 (.775)

(table continues)

Table 6 (cont.)

Logit Estimates of Probability of Unemployment Equations, White Non-Hispanic and Hispanic Men, by Ethnic Group

Variable	White Non-Hispanics	All Hispanics	Mexicans	Puerto Ricans	Cubans	Other Hispanics
NONWHITE	— --	.284 (.222)	.482 (.356)	.441 (.504)	-.094 (1.227)	-.091 (.553)
FLUENT	.132 (.118)	-.179 (.112)	-.127 (.144)	-.750*** (.350)	-.861 (.565)	-.061 (.299)
OTHINC	-.002*** (.0004)	-.001 (.001)	-.0002 (.001)	-.0006 (.004)	-.003 (.005)	-.061 (.299)
PARTTIME	.142 (.111)	.389** (.165)	.433** (.200)	.535 (.556)	1.489 (1.071)	.412 (.473)
UNRATE	.085*** (.014)	.057*** (.020)	.072*** (.023)	-.095 (.087)	.002 (.122)	-.023 (.070)
OCC	.681*** (.084)	.528*** (.145)	.519*** (.192)	.094 (.461)	1.448** (.650)	.448 (.355)
IND	.683*** (.068)	.605*** (.098)	.580*** (.128)	.395 (.304)	.408 (.470)	.941*** (.248)
HISPROP	-.011 (.007)	-.019*** (.005)	-.019*** (.007)	.012 (.047)	.019 (.079)	-.012 (.011)
Mexican	—	.002 (.169)	—	—	--	—
Cuban	— --	.372 (.251)	— —	— —	— —	— --
Central & South American	— —	-.186 (.264)	— --	-- --	-- --	-- --
Other Hispanic	-- —	.015 (.200)	— —	— —	-- --	-- --

(table continues)

Table 6 (cont.)

Logit Estimates of Probability of Unemployment Equations, White Non-Hispanic and Hispanic Men, by Ethnic Group

Variable	White Non-Hispanics	All Hispanics	Mexicans	Puerto Ricans	Cubans	Other Hispanics
Constant	-1.042*** (.290)	.141 (.401)	.395 (.457)	1.247 (1.405)	-.071 (2.511)	.450 (.973)
-2 x log likelihood	6597.03	3039.18	1872.27	324.31	151.72	479.30
N	8,480	3,164	1,937	328	163	566

Note: Dependent variable is UNEMP75. Standard errors are in parentheses.

*Statistically significant at the 10% level.
**Statistically significant at the 5% level.
***Statistically significant at the 1% level.

The anticipated inverse relationship between years of work experience and the probability of unemployment is confirmed for all groups except Cubans. Likewise, marriage and additional dependents appear generally to contribute to employment stability, though the coefficients are significant only for non-Hispanics. Among otherwise similar Hispanic men, health limitations and race do not appear to exert a significant impact on unemployment probabilities. Puerto Ricans able to speak and understand English very well have a significant advantage over other Puerto Rican men, but the effect of fluency in English seems to be weak for the other Hispanic groups.

Despite the adjustment difficulties confronting recent immigrants in a new labor market, our results for individual cohorts indicate that, whether due to high motivation, assistance by kin in the United States, or other factors, most have unemployment probabilities either insignificantly different from or significantly lower than their native-born counterparts. Thus, among all Hispanics, men who have been in this country only since 1974 (IMM7475) are about 5% less likely to be out of work than otherwise similar indigenous Hispanics. The differential is larger (12-15%) for those who arrived between 1965 and 1973 and is highly significant. After about 25 years in the United States, however, foreign-born Hispanics are about as susceptible to unemployment as the native-born.

Among white non-Hispanics, the results are less consistent and more difficult to interpret. Immigrants arriving since 1970 have a probability of unemployment insignificantly different from the native-born.[18] But the coefficients change sign and are significantly positive for two earlier cohorts (1965-69 and pre-60), for reasons which are unclear. One must bear in mind that non-Hispanic immigrants are a heterogeneous group of widely varying ethnic and national origins about whom it is hard to generalize.

The pattern observed for the pooled Hispanic sample is no doubt much influenced by the tendency among Mexican men, the largest single component of the subsample, for immigrants to have unemployment probabilities 13.5 to 18% lower than U.S.-born Mexican Hispanics during the first 10 years in the United States. The "other Hispanic" group, also concentrated in the southwestern states, exhibits a similar pattern, and the differentials are even larger than among Mexicans.

Similarly, the coefficients of the Cuban subsample are consistently negative, and nearly attain significance at the 10% level for the 1965-69 and 1970-73 cohorts. However, the regression results for Cuban immigrants must be interpreted with extreme caution because the native-born reference group consists of only 9 individuals, 4 of whom reported being unemployed at some time in 1975.

Puerto Ricans are the only ethnic group in which the most recent cohort of newcomers to the mainland United States has a significantly greater likelihood of unemployment than the native-born. Although the coefficients rapidly fall in magnitude and significance for successive cohorts, they remain consistently positive. Part of the explanation for this pattern may be the unique status among Hispanic immigrants of persons born in Puerto Rico. As mentioned above, men born in Puerto Rico are, as U.S. citizens, able to move more freely back and forth between the two countries than are most immigrant groups. High rates of temporary, as well as permanent, return migration are facilitated by fast, low-cost air transportation and the transferability of social security and unemployment insurance. Indeed, Gray (1975b) found that, in the period 1959 to 1972, unemployment insurance claims filed in Puerto Rico on the basis of mainland work experience rose dramatically. Insofar as those born on the island are more prone to periodic return visits, they are more likely than the native-born to have an impermanent attachment to the mainland labor market, discontinuous work histories, and a higher probability of unemployment. The increasingly rural, unskilled backgrounds of recent migrants, only weakly controlled for in our regressions, also put them at a disadvantage in urban northeastern job markets. The limited data available on premigration residence indicates that, by the late 1950s, three-fourths of all migrants to the mainland originated in areas outside San Juan and other major cities, urban areas which had been the source of most earlier migrants. Of those arriving on the mainland between 1957 and 1961, the largest single group of previously employed migrants came from the agricultural sector, the source of one-third of all those with some work experience. Farm laborers are thus disproportionately represented among recent cohorts (Gray, 1975b).[19]

It might be objected that rural, unskilled backgrounds are also characteristic of Mexican immigrants, yet they exhibit exactly the opposite pattern of significantly lower probabilities of unemployment than native-born members of their ethnic group. Although the limited evidence on apprehended illegal entrants from Mexico does suggest that the majority are from rural areas and are concentrated in seasonal farm labor in the United States (Fogel and Corwin, 1978), this no longer appears to hold true for those able to acquire proper documents. For example, a survey of legal entrants arriving in Texas in 1973-74 found that nearly two-thirds were from urban areas of 10,000 or more and over one-third were from cities with 100,000 or more inhabitants (Tienda, 1980). Their ability to locate employment quickly was facilitated by the fact that over 60% had lived in the United States previously (many apparently in an undocumented status) and nine out of ten had relatives waiting at their U.S. destination. Following a trend begun after the Second World War, the majority of Mexicans now live and work in urban areas and increasing numbers reside in regions outside the Southwest, though they continue to be disproportionately employed in agriculture. Their more diversified geographic, occupational, and industrial patterns, in combination with more urbanized backgrounds, may count as important advantages over Puerto Rican migrants still clustered in marginal and declining sectors of the New York City economy. However, since persons illegally in the country are doubtless underreported in any government survey, our estimates of Mexican immigrant unemployment may be biased downward if illegal entrants experience above-average rates of joblessness.

Higher unemployment in the local labor market, part-time employment, and employment in unskilled and semiskilled occupations have the expected positive impact for Hispanics and non-Hispanics alike. The latter two variables are more consistently positive and have especially large, significant coefficients for Cubans, raising unemployment probabilities by 35 and 25%, respectively. Likewise, workers in the durable manufacturing and construction industries (IND) are, as expected, more prone to joblessness in the course of the year than men in other industries: the unemployment probability is increased by about 9% for non-Hispanics and by 11% for the full Hispanic subset. Of individual ethnic groups, probabilities increase by over 11% for both Mexicans and "other Hispanics" and by roughly 6% for Puerto Ricans, the group most concentrated in industries with high unemployment.[20]

Although some economists have cited the crowding of Hispanic workers in particular labor markets as contributing to higher unemployment rates, residence in states with a high proportion of Hispanics was found to have an insignificant effect on the probability of non-Hispanics being unemployed, and was associated with a significantly lower probability of unemployment among Hispanics. This may reflect certain regional labor market differences, as well as the advantages of job search in areas with already settled populations of one's own ethnic group.

In the national and separate regional regressions (Table 7), dummy variables were included for each ethnic group with Puerto Ricans as the benchmark group. Among all Hispanics nationally, Cubans alone appeared to have a somewhat higher (by about 6%) probability of being unemployed in 1975, though the coefficient is on the borderline of significance at the 10% level. In the New York-New Jersey subsample, however, the coefficient is well below standard significance levels, suggesting that the national result may be due to the experiences of Cubans elsewhere, particularly in Florida, where the most recent immigrants are concentrated.[21] This group is quite different from most other Hispanic immigrants in that, as refugees, they entered the U.S. labor market without much opportunity for premigration preparation or job search and, on average, at a much older age than other immigrants. The relatively

Table 7

Logit Estimates of Probability of Unemployment Equations, White Non-Hispanic and Hispanic Men, by Region

	New York and New Jersey		Southwest	
Variable	White Non-Hispanic	All Hispanic	White Non-Hispanic	Mexican
EDFOR	-.195*** (.066)	-.038 (.063)	-.110 (.075)	-.084* (.047)
EDUS	-.153** (.062)	-.157* (.093)	-.023 (.051)	-.154*** (.032)
EX	-.017 (.033)	-.165*** (.054)	-.042 (.030)	-.060** (.019)
EXSQ	-.0003 (.0006)	.003*** (.001)	.0003 (.0006)	.0002 (.0003)
MSP	-.343 (.391)	-.570 (.468)	-.806*** (.308)	-.120 (.207)
CHILD5	-.216 (.303)	.128 (.316)	-.112 (.292)	-.088 (.113)
CHILD517	-.040 (.135)	.033 (.163)	.066 (.094)	-.024 (.049)
HEALTH	.479 (.458)	1.414** (.683)	.578 (.386)	-.278 (.309)
IMM74	1.012 (1.385)	.717 (1.208)	.447 (1.352)	-.493 (.520)
IMM7073	.840 (.865)	-.651 (1.106)	1.233 (1.358)	-1.259*** (.482)
IMM6569	.028 (.812)	-1.563 (1.108)	.735 (1.397)	-1.324*** (.453)
IMM6064	.370 (.785)	-.723 (1.044)	.171 (.932)	-.163 (.447)
IMMPRE60	1.052** (.498)	-.942 (.934)	.273 (.543)	-.294 (.322)

(table continues)

Table 7 (cont.)

Logit Estimates of Probability of Unemployment Equations, White Non-Hispanic and Hispanic Men, by Region

	New York and New Jersey		Southwest	
Variable	White Non-Hispanic	All Hispanic	White Non-Hispanic	Mexican
NONWHITE	— --	.093 (.643)	— —	-- --
FLUENT	.181 (.371)	-.635 (.477)	-.240 (.508)	-.135 (.187)
OTHINC	.002 (.002)	-.005 (.005)	-.001 (.002)	-.001 (.002)
PARTTIME	.334 (.463)	-.120 (.875)	.042 (.355)	.627** (.238)
UNRATE	.113 (.104)	-.039 (.183)	.021 (.045)	.093*** (.028)
OCC	.587* (.349)	.348 (.545)	.777*** (.271)	.392* (.228)
IND	.766*** (.296)	.697* (.392)	.483** (.243)	.679*** (.160)
HISPROP	.102 (.138)	.073 (.228)	-.013 (.016)	-.021** (.010)
Cuban	— --	.334 (.648)	— —	-- —
Central & South American	-- —	.092 (.523)	— —	— —
Other Hispanic	-- —	.333 (.588)	— —	-- —

(table continues)

Table 7 (cont.)

Logit Estimates of Probability of Unemployment Equations, White Non-Hispanic and Hispanic Men, by Region

	New York and New Jersey		Southwest	
Variable	White Non-Hispanic	All Hispanic	White Non-Hispanic	Mexican
Constant	-1.970 (1.999)	1.685 (3.493)	-.859 (1.113)	.404 (.600)
-2 x log likelihood	375.13	225.41	573.64	1217.44
N	525	266	806	1,321

Note: Dependent variable is UNEMP75. Standard errors are in parentheses.

*Statistically significant at the 10% level.
**Statistically significant at the 5% level.
***Statistically significant at the 1% level.

large number with professional and managerial backgrounds appear to experience considerable difficulty finding jobs in their prior occupations, and suffer sharp downward mobility for some time. These factors may contribute to a greater vulnerability to unemployment during the first few years in the United States than is observed for most other groups. It could also be argued that the exclusion of self-employed individuals and labor force participants unable to find work all year biases our results, since Cubans are about twice as likely to be self-employed as all Hispanics. Regressions run on an expanded sample including all labor force participants in 1975 revealed that the self-employed were less likely to be unemployed, but the coefficient did not approach significance. The coefficient of the Cuban variable (.4296), however, was positive and statistically significant at the 10% level, suggesting that Cubans were indeed especially affected by the 1975 recession, relative to other Hispanics.[22]

The coefficients of most variables in the regional subsamples are similar to national estimates in Table 6, suggesting that the national results were not solely reflecting regional variations. Some interesting differences are, however, discernible in the estimates for work experience, health limitations, and industry in the New York-New Jersey Hispanic subset. All are statistically significant and considerably larger (in absolute value) than those of non-Hispanics in the region or those of Hispanics nationwide. In the subsample of Mexicans in the five southwestern states, it is noteworthy that, despite the limited variability possible in the variable for the proportion of Hispanics in the respondent's state of residence, HISPROP continues to be associated with a significantly lower probability of unemployment.

Turning to the determinants of multiple spells of joblessness, Table 8 reports the logit estimates of equations in which the dependent variable is set equal to 1 if the respondent had 2 or more spells looking for work. As in the UNEMP75 equations, education, work experience, and marital status all appear to be stabilizing influences, significantly reducing the likelihood of multiple spells for both non-Hispanic whites and Hispanics. Hispanic immigrants are generally less susceptible to multiple jobless spells than the native-born, but the coefficients are only significant at the 5% level for one cohort. The non-Hispanic cohorts' coefficients are insignificant except for 1970-73 and pre-1960, which are significantly positive. Both Hispanic and non-Hispanic employees in unskilled and semiskilled occupations and in cyclical industries were found to have significantly higher probabilities, as were Hispanics in part-time jobs. And Cubans alone have a significantly (10% level) higher probability of multiple spells than the Puerto Rican reference group.[23]

Having focused thus far on the incidence of unemployment in our regression analysis, we now move to consider the role of various factors in determining the duration of time spent looking for work by men with some unemployment in 1975. The dependent variable is WKSUN75, and the independent variables differ only in the addition of a dummy variable (UI) equal to 1 if the individual received any unemployment insurance during the year. In restricting the sample here to men with some unemployment, the sample size for individual ethnic groups other than Mexicans becomes so small as to make it impractical to run separate regressions for each group. The OLS estimates for non-Hispanics and all

Table 8

Logit Estimates of Probability of Multiple Spells Equations, White Non-Hispanic and Hispanic Men

Variable	White Non-Hispanic	All Hispanic
EDFOR	-.151***	-.112***
	(.035)	(.039)
EDUS	-.093***	-.112***
	(.024)	(.031)
EX	-.026*	-.058***
	(.014)	(.018)
EXSQ	.000	.0005*
	(.0002)	(.0003)
MSP	-.531***	-.430***
	(.148)	(.193)
CHILD5	.046	.187*
	(.110)	(.110)
CHILD517	.063	-.049
	(.042)	(.048)
HEALTH	.411***	.342
	(.173)	(.252)
IMM7475	.273	-.318
	(.788)	(.455)
IMM7073	1.185**	-.854**
	(.467)	(.422)
IMM6569	.166	-.471
	(.439)	(.392)
IMM6064	.093	-.930*
	(.506)	(.476)
IMMPRE60	.665***	-.115
	(.219)	(.288)
NONWHITE	—	-.925*
	--	(.527)
FLUENT	.478*	-.122
	(.213)	(.174)

(table continues)

Table 8 (cont.)

Logit Estimates of Probability of Multiple Spells Equations, White Non-Hispanic and Hispanic Men

Variable	White Non-Hispanic	All Hispanic
OTHINC	-.002*** (.0008)	-.0005 (.001)
PARTTIME	.235 (.171)	.437** (.223)
UNRATE	.070*** (.024)	.036 (.030)
OCC	.959*** (.154)	.706*** (.252)
IND	.678*** (.109)	.629*** (.147)
HISPROP	.006 (.010)	-.011 (.008)
Mexican	— --	.157 (.285)
Cuban	— --	.768* (.412)
Central & South American	— —	-.123 (.501)
Other Hispanic	— —	.265 (.328)
Constant	-3.044*** (.486)	-1.388** (.628)
-2 x log likelihood	3018.61	1559.80

Note: Dependent variable is SPELLGTI. Standard errors are in parentheses.

*Statistically significant at the 10% level.
**Statistically significant at the 5% level.
***Statistically significant at the 1% level.

Hispanics in all states, as well as for non-Hispanics and Mexicans residing in the Southwest, are presented in Table 9.

Although better-educated individuals tend to have higher expected returns from job search, it appears that their higher search costs and perhaps also more efficient use of search techniques lead to slightly shorter periods of time out of work. For all Hispanics, an additional year of U.S. schooling is associated with some two-thirds of a week less in job search, and for Mexicans in the Southwest the reduction is even larger. The coefficients are highly significant at the 5% level for Hispanics, but are lower and insignificant for white non-Hispanics. Additional work experience has a very weak effect for all groups. In contrast, married Hispanic men have jobless durations nearly 4 weeks below single Hispanics, and the coefficient is highly significant.

Just as most Hispanic immigrant cohorts have probabilities of unemployment lower than or insignificantly different from their native-born counterparts, so also do they appear to have briefer spells out of work, although the differentials are uniformly insignificant. The same is true of the positive cohort differentials of non-Hispanics. Although, as expected, a higher local unemployment rate contributes significantly to lengthier job search (by over one-half week for both Hispanics and non-Hispanics nationwide), differences by occupational and industrial sectors appear to be insignificant. Receipt of unemployment insurance is, as previous studies have shown, associated with longer jobless periods. Among otherwise similar unemployed Hispanics, there do not appear to be significant differences by ethnic group.

Table 9

Ordinary Least Squares Estimates of Total Duration of Unemployment, 1975, for White Non-Hispanic and Hispanic Men

	All States		Southwest	
Variable	White Non-Hispanic	Hispanic	White Non-Hispanic	Hispanic
EDFOR	-.376*	-.205	-1.729	-.178
	(.219)	(.229)	(1.405)	(.510)
EDUS	-.180	-.647***	-.405	-1.028**
	(.160)	(.220)	(.716)	(.408)
EX	.078	-.106	.398	-.068
	(.090)	(.136)	(.451)	(.234)
EXSQ	-.002	.003	-.003	.000
	(.002)	(.003)	(.010)	(.005)
MSP	-2.276**	-3.761***	-12.463***	-4.293*
	(.965)	(1.308)	(3.695)	(2.365)
CHILD5	.519	.539	5.153	1.400
	(.771)	(.759)	(4.698)	(1.296)
CHILD517	-.051	-.703**	1.126	-.712
	(.299)	(.316)	(1.171)	(.510)
HEALTH	.925	1.328	1.704	3.661
	(1.175)	(1.772)	(4.406)	(3.591)
IMM7475	4.584	-1.079	26.378	-4.714
	(4.668)	(3.051)	(19.508)	(5.800)
IMM7073	4.415	-2.652	29.469	-5.131
	(3.393)	(2.735)	(20.252)	(5.528)
IMM6569	-1.83[illegible]	-.743	11.463	-5.389
	(2.424)	(2.786)	(20.062)	(5.736)
IMM6064	4.056	-2.406	—	—
	(3.208)	(2.680)	—	—
IMMPRE60	-.047	-2.819	4.083	1.152
	(1.512)	(1.976)	(6.527)	(3.489)

(table continues)

Table 9 (cont.)

Ordinary Least Squares Estimates of Total
Duration of Unemployment, 1975, for
White Non-Hispanic and Hispanic Men

Variable	All States White Non-Hispanic	 Hispanic	Southwest White Non-Hispanic	 Hispanic
NONWHITE	—	1.224	—	—
	--	(2.223)	—	—
FLUENT	-.604	1.154	-.657	.842
	(1.303)	(1.186)	(6.874)	(2.083)
OTHINC	.005	.007	-.006	.008
	(.005)	(.010)	(.016)	(.017)
PARTTIME	2.190**	1.872	4.822	.974
	(1.106)	(1.543)	(3.799)	(2.470)
UNRATE	.586***	.595***	.754	.529
	(.164)	(.213)	(.562)	(.324)
OCC	-.125	-1.279	-2.507	-3.854
	(.968)	(1.652)	(3.390)	(2.825)
IND	.249	1.286	1.571	1.422
	(.761)	(1.033)	(3.142)	(1.849)
HISPROP	.039	.002	.057	.041
	(.078)	(.055)	(.197)	(.110)
UI	3.529***	4.027***	6.702**	4.276**
	(.771)	(1.055)	(2.921)	(1.856)
Mexican	—	.126	—	—
	--	(1.726)	—	—
Cuban	—	-.978	—	—
	--	(2.581)	—	—
Central & South American	—	-4.524	—	—
	--	(2.840)	—	—

(table continues)

Table 9 (cont.)

Ordinary Least Squares Estimates of Total
Duration of Unemployment, 1975, for
White Non-Hispanic and Hispanic Men

	All States		Southwest	
Variable	White Non-Hispanic	Hispanic	White Non-Hispanic	Hispanic
Other Hispanic	— —	-1.514 (2.068)	— —	— —
Constant	12.731*** (3.202)	19.854*** (4.183)	13.293 (15.369)	26.268*** (7.143)
R^2	.053	.092	.245	.114
N	1,305	678	109	269

Note: Dependent variable is WKSUN75. Standard errors are in parentheses.

*Statistically significant at the 10% level.
**Statistically significant at the 5% level.
***Statistically significant at the 1% level.

ANALYSIS OF PREDICTED UNEMPLOYMENT DIFFERENTIALS

To what extent are the sizable differences in the unemployment probabilities of white non-Hispanics and Hispanic ethnic groups atttributable to their different characteristics, and to what extent do they reflect differential treatment in the labor market? To answer this question, each group's estimated coefficient vector in Table 6 and the mean values of characteristics were first used to predict probabilities of unemployment. The differences in predicted probabilities between white non-Hispanics and the various Hispanic groups are presented in the first row of Table 10.

The predicted difference between all Hispanics and non-Hispanics is nearly identical to the actual average difference of .066 in Table 4. Our model was especially successful in predicting the Mexican and Puerto Rican probabilities, but underestimated the actual Cuban/non-Hispanic differential and the "other Hispanic"/non-Hispanic differential by about one-third.

The average characteristics of each Hispanic group were next substituted into the white non-Hispanic logit function to evaluate the role of differential treatment. If Hispanic characteristics were treated in the same manner as those of non-Hispanics, the findings in row 2 reveal that the difference in their unemployment probabilities would fall from an unadjusted .066 to .042, a reduction of over 36%. The reductions by ethnic group range from 31.6% for Mexicans to 56.6% for Cubans. Only Puerto Ricans would be largely unaffected by such a change, due mostly to the greater impact of occupation and industry in the non-Hispanic equation. Overall, it appears that relatively unfavorable treatment of

Table 10

Decomposition of Differences in Unemployment Probabilities between White Non-Hispanics and Hispanics

Assumption	Hispanic/ Non-Hispanic Differential	Mexican/ Non-Hispanic Differential	Puerto Rican/ Non-Hispanic Differential	Cuban/ Non-Hispanic Differential	Other Hispanic/ Non-Hispanic Differential
Group's Own Characteristics & Coefficients	.066	.068	.085	.057	.020
Group's Own Characteristics, Non-Hispanic Coefficients	.042	.047	.084	.025	.011
Group's Own Coefficients, Non-Hispanic Schooling Characteristics	.019	.005	.070	.037	.003
Group's Own Coefficients, Non-Hispanic Job & Labor Market[a] Characteristics	.073	.083	.095	.051	.035
Group's Own Coefficients, All Non-Hispanic Characteristics	.024	.013	−.015	.108	.017

[a] Average non-Hispanic values for PARTTIME, UNRATE, OCC, IND, and HISPROP were assigned to each Hispanic group.

Hispanic characteristics in the labor market accounts for a substantial fraction of the unemployment differential.

To examine the relative importance of various characteristics, it was assumed that each Hispanic group kept its own coefficient vector and its own values of all characteristics except educational attainment (EDFOR and EDUS). The large "schooling gap" (over 3 years in our sample) between Hispanics and white non-Hispanics has often been cited as one of the most serious disadvantages hindering Hispanic earnings and employment progress. Its singular importance for unemployment is confirmed by the results reported in row 3: over 70% of the difference in unemployment probabilities between Hispanics and non-Hispanics would be eliminated solely by equalizing educational attainment levels. For Puerto Ricans, the differential falls by only 18%, and for Cubans by one-third, both resulting from lower EDUS coefficients relative to EDFOR and other groups' schooling coefficients. But the differentials of Mexicans and of other Hispanics fell by 85 to 90%.

When non-Hispanic job and labor market characteristics alone are substituted into the Hispanic equations, the difference in unemployment propensities between all Hispanics and non-Hispanics is diminished by only one-half of 1%. For most groups, the differential increases, reflecting the fact that, for example, Mexicans are less likely than non-Hispanics to be part-time workers, to live in SMSAs with high rates of joblessness, or to be in the durable manufacturing or construction industries. Only the Cuban/non-Hispanic differential is reduced (by 10.9%), due primarily to non-Hispanics' lower local unemployment rates and smaller proportion of workers employed in unskilled and semiskilled occupations, as well as to the unusually large impact of such employment estimated in the Cuban unemployment equation.

Finally, the full set of non-Hispanic personal and labor market characteristics was substituted into the Hispanic equations. The results in the last row of Table 10 show that, with the same average characteristics as non-Hispanic whites, Mexicans would have nearly the same probability of unemployment and Puerto Ricans a slightly lower probability of unemployment than non-Hispanics. But the other Hispanic/non-Hispanic differential falls by only 19%, as the impact of increased schooling levels is largely canceled out by the deleterious effects of being assigned non-Hispanic job and labor market characteristics. The Cuban/non-Hispanic differential is the only one to rise, nearly doubling as a result of non-Hispanics' smaller proportion of schooling abroad and smaller immigration cohorts, both of which are given considerable weight in the Cuban function.

Overall, the difference in the probability of unemployment between all Hispanics and white non-Hispanics is reduced by 63.4%. It thus appears that the unemployment differential is largely attributable to differences in personal and other characteristics. The remaining one-third of the differential may reflect differences in unmeasured characteristics and discrimination. The impact of the latter may, of course, be even greater if, as a number of studies have suggested, differences in certain characteristics such as schooling are at least in part due to previous and anticipated discrimination against Hispanics (see Fligstein and Fernandez, 1982, and studies cited in that work).

SUMMARY AND CONCLUSIONS

This paper has investigated differences in the incidence and duration of unemployment among Hispanic men and between Hispanics and non-Hispanic whites. It found that, both nationally and within particular regions, Hispanics were far more likely to be unemployed one or more times in the course of 1975 than were non-Hispanics. The severity of the 1974-75 recession was reflected in the finding that nearly one-third of the unemployed were out of work for six months or more. But there does not appear to have been a significant difference between Hispanics and non-Hispanics either in the average duration of joblessness or in the effects of most personal and labor market characteristics on total spell length. Rather, the principal difference is in the higher probability of Hispanics experiencing one or more spells without work.

Differential treatment appears to play a significant role in generating the higher unemployment of Hispanics, but differences in characteristics appear to play by far the most important explanatory role. Our findings point to substantial differences among Hispanic ethnic groups in the nature of the unemployment experience and in the key characteristics influencing it. Mexican, Puerto Rican, and Cuban men had both a higher incidence and longer average duration of unemployment than Central and South Americans and the "other Hispanic" group. For Mexicans, lower schooling levels are the single most important factor accounting for their above-average probability of unemployment. If Mexicans had the same amount of schooling as white non-Hispanics, their unemployment rates would be nearly equalized. Whereas, among Mexicans, immigrants tend to have significantly lower probabilities of unemployeemnt, the opposite appears to be the case for Puerto Rican men. The large inflow of recent, increasingly rural and unskilled migrants from the island appears to contribute to their higher incidence of unemployment. Low educational levels play an influential but secondary role.

Despite relatively low unemployment rates during most years for which data are available, Cuban men appear to have been especially vulnerable to unemployment in the course of the 1975 recession. They were found to have higher probabilities of being unemployed and of experiencing multiple jobless spells than the other Hispanic groups, even after controlling for a wide variety of personal and labor market variables. The results of a decomposition analysis of the Cuban/non-Hispanic unemployment differential suggest that the concentration of largely foreign-born Cuban workers in certain low-wage occupations in high-employment SMSAs may be among the principal causes of this pattern. However, because of the extremely small size of the Cuban subsample in both the SIE and the periodic Current Population Surveys, larger data sets will be required in the future to explore more fully what appear to be significant differences in the unemployment experience among Hispanic ethnic groups.

NOTES

[1] Note that the relative unemployment differential appears to move countercyclically: from a high of 1.69 in the slack labor market situation of 1976, it fell from 1977 to 1979, then rose again in the 1980 recession. This is, of course, far too brief a period to permit drawing firm conclusions about broad cyclical patterns in Hispanic unemployment.

[2] According to 1980 Census figures, persons of Spanish extraction accounted for 55.9% of the population in Miami, 27.5% in Los Angeles, 19.9% in New York City, and 19.6% in the Southwest as a whole (U.S. Bureau of the Census, 1981).

[3] Since April 1974, separate tabulations of labor force information on the Spanish-origin population have been published quarterly by the Bureau of Labor Statistics. Until that time, the only sources of government data on Hispanics were the decennial census and once-a-year supplements to the Current Population Survey in 1969, 1971, and 1972. For a description of the available BLS data and comparability problems with earlier series, see McKay (1974).

[4] For a detailed description of the survey methodology and questionnaire, see U.S. Bureau of the Census (1977).

[5] For a full description of the specific capital framework, see Parsons (1972).

[6] See Lippman and McCall (1976) for a review of the job search literature. Note that, unlike many studies in this literature, "duration" as used here refers not to duration per completed spell of unemployment (information not asked in the SIE survey), but rather to the full

"unemployment experience" in the course of the year, i.e., to the total number of weeks jobless and looking for work in 1975.

When this paper was already at an advanced stage, I learned of two recent studies whose findings are relevant to this issue. Tienda et al. (1981, Ch. 9) look at job search techniques and the duration of unemployment among Hispanics, also using SIE data. Their findings appear to be generally consistent with my own on duration. Chiswick (1982) used both 1970 Census and SIE data to look at weeks worked by immigrants, and finds generally fewer weeks among recent cohorts. These findings are discussed in more detail in DeFreitas (1982).

[7] On the occupational mobility of Cuban immigrants, see Chiswick (1978b) and Moncarz (1973). Borjas (1982) provides evidence on the high rate of investment in U.S. education by Cuban immigrants relative to otherwise comparable to Hispanics.

[8] See U.S. Bureau of Labor Statistics (1979a) for the annual unemployment rates of selected SMSAs.

[9] See, for example, Ehrenberg and Oaxaca (1976). For a review of relevant studies, see Hamermesh (1977).

[10] Findings cited in the text but not included in the tables are in an appendix available on request.

[11] The "other Hispanic" grouping is a residual category including individuals identifying themselves as Hispanics of mixed ethnic background (e.g., Portuguese-Cuban).

[12] For evidence on the above-average socioeconomic backgrounds of Dominican and Colombian immigrants, the two largest Central-South American groups in New York City, see Sassen-Koob (1979).

[13] While the principal difference between Hispanics and non-Hispanic whites is in the incidence of unemployment, the single most important component of unemployment for all ethnic groups in 1975 was the duration of time unemployed. This can be most clearly seen by defining the personal unemployment rate for the ith individual during the year as the ratio of the number of weeks unemployed (W_{ui}) to the total number of weeks in the labor force (W_{li}):

$$u_i = \frac{W_{ui}}{W_{li}}.$$

It can be easily shown (see Leighton and Mincer, 1980) that a weighted average of these rates for a given group can be computed as

$$\frac{\sum W_{ui}}{\sum W_{li}} = \frac{U}{L} \cdot \frac{W_u}{52} \cdot \frac{1}{(1 - W_{olf}/52)},$$

where U = number of individuals unemployed during the year,

L = number of individuals in the labor force during the year, and

W_{olf} = number of weeks spent out of the labor force by labor force participants during the year.

The following calculations, based on the data in columns 1, 2, and 4 of Table 4, reveal the primary importance of the duration component ($W_u/52$) relative to the incidence of unemployment (U/L) and the nonparticipation component ($1/(1 - W_{olf}/52)$):

	U/L	$W_u/52$	$1/(1 - W_{olf}/52)$
Non-Hispanic White	.148	.340	1.086
Mexican	.214	.346	1.103
Puerto Rican	.228	.362	1.063
Cuban	.228	.381	1.037
Central & South American	.171	.311	1.063
Other Hispanic	.179	.321	1.091

[14] Calculations of a measure of average duration per spell, obtained by dividing total weeks unemployed by the number of spells for each respondent with some unemployment in 1975, result in a similar ranking for all groups except Mexicans, who suffer more spells of shorter average length than white non-Hispanics or most Hispanic groups:

	White Non-Hispanic	Mexican	Puerto Rican	Cuban	Central & South American	Other Hispanic
Average	14.25	13.53	15.77	15.85	13.84	12.09
Duration per spell (in weeks)	(11.52)	(10.94)	(11.02)	(12.40)	(12.22)	(11.44)

[15] Unpublished BLS tabulations of Current Population Survey data on annual male unemployment rates by reason for unemployment in 1976 (the first year for which annual rates by reason among Cubans were available) likewise indicate an above-average unemployment rate due to job loss among Cubans, though the rate for Puerto Ricans is well above that found in the SIE:

Unemployment Rates of Men Aged 16 and Over, by Reason, 1976

	Job Losers	Quits	Entrants
All Whites	3.90	0.70	1.80
All Hispanics	7.82	1.03	3.24
Mexican	6.77	0.97	3.20
Puerto Rican	13.78	1.06	3.54
Cuban	10.60	1.68	2.24

[16] Tests of the equality of the coefficients of Hispanics and non-Hispanics and among the Hispanics groups yielded chi-square statistics (37.21 and 48.5, respectively) above the critical value (37.2), indicating significant differences in the unemployment parameters. Significant differences were also found between the coefficients of each Hispanic group and white non-Hispanics, except in the case of Puerto Ricans.

[17] Recent studies of the earnings of foreign-born men have found that the partial effect on earnings of an extra year of schooling following arrival in the United States is either slightly lower than or insignificantly different from the effect of an additional year of schooling abroad for a pooled sample of foreign-born whites (Chiswick, 1978a), but that post-immigration schooling has a higher effect than pre-immigration schooling for men from Mexico and Central and South America (DeFreitas, 1979).

[18] These results are consistent with findings for native- and foreign-born white males based on 1970 Census data in DeFreitas (1979; Ch. 4).

[19] From 1951 to 1961, over one-half of migrants interviewed prior to departure from Puerto Rico had no previous work experience.

[20] See Gray (1975a) for an analysis of the occupational and industrial distributions of Puerto Ricans in New York City.

[21] Separate regressions could not be estimated for a Florida subsample owing to inadequate sample size.

[22] When the UNEMP75 regression was run on an expanded sample of all Hispanic labor force participants in 1975 (OCC and IND were excluded, since no information on occupation or industry was available for non-

workers that year), the estimated ethnic group and self-employment coefficients were as follows (standard errors in parentheses):

SELF-EMPLOYED	-.114	(.214)
Mexican	.083	(.156)
Cuban	.446*	(.228)
Central & South American	.041	(.246)
Other Hispanic	.036	(.185)

N = 3,432

*Statistically significant at the 5% level.

Coefficient estimates of the other variables bore similar signs and magnitudes to those in Table 6, col. 2.

[23] Estimation of the multiple spells equation for the expanded sample of all male labor force participants resulted in an insignificantly positive differential between the self-employed and other workers and a highly significant (5% level) positive coefficient (.896) for the Cuban dummy variable.

REFERENCES

Blau, Francine, and Lawrence Kahn. 1981a. Causes and consequences of layoffs. *Economic Inquiry*, *19*, 270-296.

Blau, Francine, and Lawrence Kahn. 1981b. Race and sex differences in quits by young workers. *Industrial and Labor Relations Review*, *34*, 563-577.

Borjas, George. 1982. The earnings of male Hispanic immigrants in the United States. *Industrial and Labor Relations Review*, *35*, 343-353.

Chiswick, Barry. 1978a. The effect of Americanization on the earnings of foreign-born men. *Journal of Political Economy*, *86*, 897-921.

Chiswick, Barry. 1978b. A longitudinal analysis of the occupational mobility of immigrants. *Proceedings of the 30th Annual Winter Meeting, Industrial Relations Research Association*. Madison, Wis.: IRRA.

Chiswick, Barry. 1980. *An analysis of the economic progress and impact of immigrants*. Washington, D.C.: National Technical Information Service.

Chiswick, Barry. 1982. The employment of immigrants in the United States. Department of Economics, University of Illinois at Chicago Circle, mimeo.

Cohen, Malcolm, and William Gruber. 1970. Variability by skill in cyclical unemployment. *Monthly Labor Review*, *93* (August), 8-11.

DeFreitas, Gregory. 1979. The earnings of immigrants in the American labor market. Unpublished Ph.D. diss., Columbia University.

DeFreitas, Gregory. 1982. *The earnings and labor force behavior of immigrants*. Report prepared for the National Institute of Child Health and Human Development, Washington, D.C.

Ehrenberg, Ronald, and Ronald Oaxaca. 1976. Unemployment insurance, duration of unemployment, and subsequent wage gain. American Economic Review, 66, 754-766.

Flanagan, Robert J. 1978. Discrimination theory, labor turnover, and racial unemployment differentials. Journal of Human Resources, 13, 187-207.

Fligstein, Neil, and Roberto Fernandez. 1982. The causes of school transitions for Hispanics, whites, and blacks. Paper presented at the Hispanic Labor Conference, Santa Barbara, Calif., February.

Fogel, Walter, and Arthur Corwin. 1978. Shadow labor force: Mexican workers in the American economy. In Arthur Corwin, ed., Immigrants—and immigrants: Perspectives on Mexican labor migration to the United States. Westport, Conn.: Greenwood Press.

Gilroy, Curtis. 1974. Black and white unemployment: The dynamics of the differential. Monthly Labor Review, 97 (February), 38-47.

Gray, Lois S. 1975a. The jobs Puerto Ricans hold in New York City. Monthly Labor Review, 98 (October), 12-16.

Gray, Lois S. 1975b. A socio-economic profile of Puerto Rican New Yorkers. Bureau of Labor Statistics, Regional Report 46.

Hamermesh, Daniel. 1977. Jobless pay and the economy. Baltimore: Johns Hopkins University Press.

Leighton, Linda, and Jacob Mincer. 1980. Labor turnover and youth unemployment. National Bureau of Economic Research, Conference Paper No. 27. Cambridge, Mass.

Levy, M. B., and W. Wadycki. 1973. The influence of family and friends on geographic labor mobility: An international comparison. Review of Economics and Statistics, 55, 198-203.

Lippman, Steven, and John McCall. 1976. The economics of job search: A survey. Economic Inquiry, 14, 155-189.

McKay, Roberta. 1974. Employment and unemployment among Americans of Spanish origin. Monthly Labor Review, 97 (April), 12-16.

Moncarz, Raul. 1973. A model of professional adaptation of refugees: The Cuban case in the U.S., 1959-70. International Migration, 11, 109-114.

Newman, Morris. 1978. A profile of Hispanics in the U.S. work force. Monthly Labor Review, 101 (December), 3-14.

Parsons, Donald. 1972. Specific human capital: An application of quit rates and layoff rates. Journal of Political Economy, 80, 1120-1143.

Parsons, Donald. 1977. Models of labor market turnover: A theoretical and empirical survey. In R. Ehrenberg, ed., Research in Labor Economics, Vol. 1. Greenwich, Conn.: JAI Press.

Piore, Michael. 1979. Birds of passage: Migrant labor and industrial societies. Cambridge: Cambridge University Press.

Reimers, Cordelia. 1980. Sources of the wage gap between Hispanic and other white Americans. Working Paper No. 139, Industrial Relations Section, Princeton University.

Rogg, Eleanor, and Rosemary Cooney. 1980. Adaptation and adjustment of Cubans: West New York, New Jersey. New York: Hispanic Research Center.

St. Marie, Stephen, and Robert Bednarzik. 1976. Employment and unemployment during 1975. Monthly Labor Review, 99 (February), 11-20.

Sassen-Koob, Saskia. 1979. Formal and informal associations: Dominicans and Colombians in New York. International Migration Review, 13, 314-332.

Tienda, Marta. 1980. Familism and structural assimilation of Mexican immigrants in the United States. International Migration Review, 14, 383-408.

Tienda, Marta, et al. 1981. Hispanic origin workers in the U.S. labor market: Comparative analyses of employment and earnings. Washington, D.C.: National Technical Information Service.

U.S. Bureau of the Census. 1977. Technical documentation of the 1976 Survey of Income and Education. Washington, D.C.: Census Bureau.

U.S. Bureau of the Census. 1981. Age, sex, race, and Spanish origin of the population by regions, division, and states: 1980. PC80-S1-1. Washington, D.C.: Census Bureau.

U.S. Bureau of Labor Statistics. 1979a. Employment and training report of the President. Washington, D.C.: Department of Labor.

U.S. Bureau of Labor Statistics. 1979b. Handbook of labor statistics, 1978. Washington, D.C.: Department of Labor.

U.S. Bureau of Labor Statistics. 1981. Employment and Earnings, 28, (January).

Labor Market Turnover and Joblessness for Hispanic American Youth

Stanley P. Stephenson, Jr.
College of Business Administration
Pennsylvania State University

I am grateful for comments from Orley Ashenfelter, Robert Mare, and Finis Welch and for the computational assistance of Chris Sachsteder and David MacPherson.

Labor Market Turnover and Joblessness for Hispanic American Youth

This paper estimates the determinants of joblessness of Hispanic American youth with the use of national panel data and an analysis which focuses on the rates of entering and leaving work and nonwork. A main issue is to estimate how individual characteristics and labor market characteristics affect the labor turnover rates of Hispanic youths. For instance, education and skill training for individuals are at the heart of several federal policies to reduce joblessness by improving labor supply, whereas tighter aggregate labor market conditions are associated with efforts to reduce youth joblessness by focusing on labor demand--i.e., maintaining strong aggregate demand for workers primarily by monetary and fiscal policies. Low family income and age have also been used as factors in "targeting" federal employment funds; and recent research has stressed the heterogeneity within the Hispanic community. Higher local unemployment rates are found to reduce male rates of job finding rather sharply.

Consideration of employment policy issues in a turnover model context is in keeping with several other recent studies of youth labor markets. Leighton and Mincer (1979), Heckman and Borjas (1980), Flinn and Heckman (1981), and Stephenson (1982) each used a turnover analysis approach to examine the determinants of high youth rates of joblessness and short periods of job tenure. Each of these studies extends to youth labor markets the basic premise that understanding the relatively high rates of youth joblessness begins with examining the determinants of the rates of entering and leaving spells of work and nonwork. This general agreement, which can be traced to the work of Hall (1972), and, more recently, Clark and Summers (1979), is referred to as the turnover hypothesis of unemployment. This basic premise underlies the current work as well.

Another similarity in the Heckman and Borjas, Flinn and Heckman, and Stephenson studies is the use of maximum likelihood methods to study labor market spell duration determinants. This approach is especially appropriate in that individual labor market duration data are frequently censored and thus cannot be properly studied with standard regression techniques. The advantage of this approach is apparent in several recent empirical papers dealing with unemployment duration--Burdett et al. (1981), Lancaster (1979), Lancaster and Nickell (1980), and Tuma and Robins (1980). This paper also uses a maximum likelihood approach to estimate parameters in several models of determinants of exit rates from work and nonwork, using continuous time, individual data. The data are from the New Youth Cohort, a national panel of nearly 13,000 youths aged 14 to 21, collected by NORC in 1979 and 1980. One-seventh of the youths are Hispanics; they are the subject of this study.

We will first consider several theoretical issues, and then present two different empirical models: a constant hazard rate model, and a model which allows for time dependence. The data are then described. The next section considers empirical results for each model. The final section summarizes implications of the research for Hispanic youth labor policy.

THEORETICAL ISSUES

The purpose of this section is to provide a theoretical framework for the empirical analysis. We consider job finding and job leaving in a stationary world, and briefly discuss nonstationary implications. The discussion focuses on the single individual and assumes a two-state environment in which the individual either works or searches for work.

Job Finding

Simple job search models have been offered as a foundation for the recent empirical studies of unemployment duration by Bjorklund and Holmlund (1981), Flinn and Heckman (1981), and Lancaster (1979). We begin with a similar model.

Assume that an income-maximizing individual, who is not working, searches for work and receives job offers which are sorted into acceptable and nonacceptable offers. Job offers arrive as a random process which we assume to be described by a Poisson process with parameter h, or $h(t)$, $t > 0$. Let $h(t)dt$ be the probability of a job offer in a short interval, $(t,t+dt)$, and let $F(w)$ be a known distribution of wage offers. We assume that accepted jobs last forever and that job offers cannot be hoarded, i.e., a once-refused job offer cannot be later accepted, and workers live essentially forever. The key behavioral decision by the searcher is the determination of a reservation wage w^* at time t, because a choice sequence of $w^*(t)$ leads to a sequence of transition probabilities which may be interpreted as job-finding probabilities.[1] The transition probability, μ, in a short interval $(t,t+dt)$, equals the product of two components, $h(t)$, the job offer probability in that interval, and $[1-F(w^*(t))]$, the acceptance probability, or

$$(1) \quad \mu = [1-F(w^*(t))]\ h(t)dt.$$

A function Θ, called the hazard, or failure, rate, is the limiting value of μ as $dt \to 0$. This limiting value provides a linkage between individual search policy and observed spells of unemployment durations.

Let $G(t)$ be the probability of job finding by an unemployed person at any time before t. Thus, $1-G(t)$, often called the survivor function, is the probability that a person who began an unemployment spell at a time t remains unemployed until time t+dt. We express the relationship between μ and Θ as follows:

$$(2)\qquad \Theta(t) = \lim_{dt \to 0} \mu(t,t+dt)/dt$$

$$\Theta t = \lim_{dt \to 0} \Pr(\text{at job at } t+dt \mid \text{unemployed at } t)/dt$$

Equation (2) can be expressed in terms of the survivor function, $1-G(t)$, and $g(t)$, an associated density function,

$$(3)\qquad \Theta(t) = g\,(t)dt/1-G(t),$$

and, on integration,

$$(4)\qquad 1-G\,(t) = \exp\,[-\int_s^t \Theta(u)du].$$

Equation (4) is the fundamental relation connecting a search policy with unemployment duration; more specifically, equation (4) relates the sequence of job-finding probabilities associated with choice of $w^*(t)$ to the distribution of unemployment duration.[2] If transition rates are constant over time, a product of the stationary search model (Flinn and Heckman, 1981, p. 7), then

$$(5)\quad 1-G_1(t) = \exp[-\Theta u]$$

where u, u = t-s, is the duration time in the state.

Furthermore, as is well known, the assumed exponential distribution of search times (u) means that the expected duration of nonwork (D) can be written as the reciprocal of the hazard rate, or

$$(6)\quad D = 1/\Theta$$

or

$$D = 1/\lim_{dt \to 0}[1-F(w^*(t))] \cdot h(t)dt.$$

An optimal search policy, if one assumes an infinite time horizon and a discount rate, r, involves solving for a reservation wage in the familiar expression (see Lippman and McCall, 1976).

$$(7)\quad c + w^* = (\lambda/r) \int_{w^*}^{\infty} (w-w^*)f(w)dw,$$

where c is the instantaneous (and constant) search cost and f(w) is the known distribution of wage offers. If $w^* < w$, search stops and the offer is accepted. Equation (7) suggests that the searcher should select that w* which will equate expected marginal costs and marginal revenue from continued search. This is a stationary search process even though w* may change as other values in (7) change.

A decline in w* can arise via a leftward shift in the wage offer distribution, an increase in the cost of search (c), a decline in the rate of arrival of job offers (h), or an increase in the discount rate (r). Associated with these effects, as Flinn and Heckman have noted (p. 7), are hazard rate changes. The hazard rate $\Theta(t)$ will increase with a rise in search costs, an increase in the discount rate, or a leftward shift in the distribution of wage offers, which means that each of these three effects, other things equal, would reduce expected nonwork duration, D.

An increase in h, the rate of job offers, ceteris paribus, would produce two effects of different sign: (1) an increase in D via an increase in w*, and (2) a decrease in D via an increase in Θ, the instantaneous transition rate. Which effect of an increase in h dominates D cannot be determined a priori. Feinberg (1977), however, notes that the second effect dominates in normal and rectangular wage offer distributions.

These theoretical issues can be linked to the main analytical point, training vs. aggregate demand policy as strategies to enhance job finding for Hispanic youth. We expect a reduction in the local unemployment rate to increase the job offer arrival rate. This effect on expected nonwork durations is, however, ambiguous, for reasons just stated. More training would also increase the rate of job offers, but we also expect more training to operate as a rightward shift in the job offer distribution. If w* did not increase enough to offset this distribution shift, then we would expect that the net effect of greater training would be to reduce nonwork duration. Which effect, training or greater labor demand, would have the greater impact on reducing D is an empirical issue.

Job Leaving

In the job finding discussion, we built on recent developments in job search models used to examine unemployment arising from turnover. To model the rate of leaving a job is more complicated. On the one hand, one might consider a search model of an employed worker similar to the job finding model in that a currently employed individual would be assumed to compare the best rewards from alternative time uses (w*) vs. keeping a current wage, w. Yet such a model has an extra complication; one has to consider the potential actions of both the worker and the current employer in terms of changing the effective rules regarding the quantity or quality of work as well as wage adjustments (Okun, 1981, Chap. II). To develop such a general model is beyond the scope of the present paper. On the other hand, more formal presentations such as that of Flinn and Heckman (1981, pp. 27-30) or Burdett et al.--papers which utilize dynamic programming methods to derive instantaneous utility-maximization rules for leaving a job--are somewhat disappointing in terms of predictive content. That is, according to Flinn and Heckman (p. 30), if one continues to assume time stationary value functions, then the harzard function associated with job leaving is independent of time spent at the job! This seems a stiff price to pay in order to achieve a tractable model, but to drop the stationarity assumption sharply undermines one's ability to derive testable propositions.

A reasonable alternative is to estimate the rate of job leaving in an empirical model which is based loosely on economic theory and to test for the presence or not of time dependence, among other determinants. That is, based on past research, e.g., Burdett et al.(1981), we expect that greater wage rates will be associated with a reduced rate of job leaving. Hispanic youth with relatively more work experience, education, and skill training, variables which may be closely associated with a relatively greater market wage, will therefore be expected to have a lower rate of job leaving than other persons. Similarly, we expect that job separations will be affected by several aspects of the labor market. First, the rate of job leaving should be affected by the overall tightness of the labor market; yet the nature of the effect is unclear, a priori. In an economic downturn, layoffs increase, but voluntary quits presumably will decrease. Similarly, in geographic areas where market and nonmarket alternatives are relatively numerous, such as a large urban area, we would expect job separations to exceed that for persons from rural areas. Finally, we expect that a number of demographic characteristics and past work efforts may affect the rate of job leaving. For instance, if the individual worker's earnings are relatively important to a family, as might be the case in a low-income family, then we would expect job leaving rates to be relatively low. Being married, greater fluency in English, older youth, and a more stable past work history, all may reduce the rate of job leaving.

As per the effect of job tenure on the rate of job leaving, the frequent observation is that persons with relatively more time on the job will have a reduced rate of job leaving—e.g., Leighton and Mincer (1979). Jovanovich (1979), however, presents a theoretical model of worker and firm sorting in which the separation probability at first rises early in the tenure period and then begins to decline with more and more time on the job. This time-dependence effect is tested below.

EMPIRICAL MODELS OF LABOR TURNOVER

The Basic Model

In this section we present the basic stochastic model[3] used to study the determinants of early post-school labor mobility. We assume, following Heckman and Borjas (1980), Robins, Tuma, and Yaeger (1980), and Tuma and Robins (1980), who have presented similar labor turnover models, that the individual is in one of two states at any time, employed or not employed.

We begin by describing an individual's work history in some total observation perid (0, T). Within this overall time period, one may consider an infinite number of smaller time periods and record the individual's employment state, employed or not employed, in each interval. A spell is a continuous period of time in a state. We consider persons in state i at time t and ask what is the probability that they are in state j at some later time $t + \Delta t$. We assume stochastic movement over time from one state to another. Specifically, we assume a standard first-order, finite state, continuous-time Markov process generates the distribution of state outcomes over time. The probability that a worker who is in state i at time t then switches to state j at a later time, $t + \Delta t$, is the transition probability $p_{ij}\,(t,\ t + \Delta t)$. The transition rate, $\theta_{ij}(t)$, is thus defined as:

$$(8) \qquad \theta_{ij}(t) = \lim_{\Delta t \to 0} \text{pr (in state } j \text{ at } t + \Delta t \mid \text{in state } i \text{ at } t)/\Delta t$$

$$= \lim_{\Delta t \to 0} p_{ij}(t,\ t + \Delta t)/\Delta t,$$

where $i \neq j$. The rate of leaving one state $\theta_i(t)$ is the rate of entering the second state j. The denominator in equation (8), the probability of remaining in state i until time t, is really $1 - G_i(t)$, where $G_i(t)$ is the probability of leaving state i at any time t. The term $1 - G_j(t)$ is called a survivor function, when it gives the probability that a person in state i remains in that state between a start time s and time t. As noted in equation (5), if the transition rates are time independent, then the survivor function is expressed as:

$$(9) \qquad G_i\ (t \mid s) = e^{-ur_i},$$

where $u = t - s$. That is, the probability that a nonworking youth remains jobless declines exponentially as the length of joblessness increases. Even though θ_i is assumed time independent, the probability of leaving a state varies over time. According to Tuma and Hanna (1979), this is one of the main advantages to modeling social processes by transition rates and not probabilities of change.

In this paper we assume that the same θ_{ij} exists only for persons of the same values of an observable, fixed, exogenous vector of X variables. We assume a log-linear relationship between θ_{ij} and X, or

$$(10) \quad \ln \theta_{ij} = X\beta_{ij}.$$

We then use the estimated β_{ij} to derive individual θ_{ij}. The log-linear transformation restricts the θ_{ij} to be positive.

Alternative Models

Two alternative model parameters are estimated in this paper for Hispanic American youth.[4] It is instructive to present and briefly describe each model.

	Model	Description
(11)	Model 1 $\theta_{jk}(t) = e^{(\beta_{jk}\underline{X})}$	This is the time-independence (time-invariant) model just presented as the Basic Model. Transition rates, θ_{jk}, are postulated to be log-linear functions of the observed variable vector, $\underline{X}$.
(12)	Model 2 $\theta_{jk}(t) = e^{(\beta_{jk}\underline{X}+\gamma t)}$	This is a time-dependent model which postulates that transition rates decline exponentially over time until some asymptote is reached. I assume a zero asymptote and that the e_{jk} are the same in each period, but time in a spell does alter exit rates.

Estimation. We estimate the β_{ij} by a maximum likelihood method and data on observed spell length. Let Y_i be the observed duration of the ith spell. A spell ends when a state change takes place within the reference period or at the end of the sample reference period, in either case $Y_i=1$; otherwise let $Y_i=0$. In this two-state case, if we assume time-independent transition rates and independence of observed spells, then the likelihood function for leaving the nonwork state j is:

$$(13)\quad L_j = \prod_{i=1}^{n} f_j(u_i \mid \beta_{ij}, \underline{X_i})^{Y_i} \cdot (1-F_j[u_i \mid \beta_{ij}, \underline{X_i}])^{1-Y_i}$$

where n is the observed number of spells in state j. Maximizing with respect to β_{ij} gives maximum likelihood estimates of β_{ij}. With these β_{ij} we can predict individual specific transition rates. In turn, these transition rates can be used to derive various estimates of Hispanic American youth labor mobility, such as the expected work duration, the expected nonwork duration, and the steady-state employment probability.[5]

DATA

The primary data sources of this study are the first two waves of the National Longitudinal Survey of Youth (NLS-Youth) which were collected in 1979 and 1980 by the National Opinion Research Center (NORC) in cooperation with the Center for Human Resources Research at Ohio State University. These data are particularly suited to the research goals stated above. First, the overall sample size, 12,693 youths aged 14 to 21 years, includes 1,924 Hispanics. This relatively large sample size permits disaggregation by sex and the application of criteria which are consistent with employment policy analysis. A second advantage is that the sample is national in scope. A third advantage is that the survey design accounts for all time between January 1, 1978, and the spring 1980 interview—that is, all work and nonwork spells are accounted for in this period. These detailed data have been processed for this study into specific periods of three work-history categories: (1) working, (2) not working owing to layoff, and (3) not working for other reasons.[6] A final advantage is the availability of person-specific environmental variables, such as SMSA and county employment rates, industrial characteristics, and labor demand measures, from the City-County Databook. These data were matched with the NLS-Youth data.

Sample means of the study group of Hispanic youth used here are shown in Table 1. These are individual sample means although the unit of analysis is a spell of work or nonwork and one individual may have more than one spell.

The main data screens used were age and enrollment in school. Persons selected became 16 years old on or before the spring 1979 inter-

Table 1

Explanatory Variables: Sample Means and Standard Deviations

Variables and Definitions	Mean (SD)	
	Men	Women
If 1979 interview was conducted in Spanish	.15 (.36)	.09 (.29)
If believe problem with getting a good job is due to POOR ENGLISH (interview conducted in Spanish)	.26 (.64)	.26 (.57)
Percentage Spanish in county, 1979	1.98 (1.90)	1.97 (1.84)
If MARRIED, spouse present, 1979 (incl. common law marriage)	.39 (.17)	.31 (.19)
Local UNEMPLOYMENT RATE, 1979	5.33 (1.50)	5.17 (1.48)
Percentage population change (1970-75) in county, 1979	60.31 (92.62)	68.91 (93.81)
EDUCATION COMPLETED		
If 0-9 years	.49 (.50)	.35 (.48)
If 10 or 11 years	.27 (.45)	.19 (.40)
If 12 or more years	.24 (.42)	.45 (.50)
AGE in years	21.16 (1.30)	21.41 (1.19)
If not U.S. resident at age 14	.27 (.45)	.24 (.43)
If VOCATIONAL EDUCATION received between Jan. 1, 1978 and spring 1980	.05 (.22)	.09 (.29)

(table continues)

Table 1 (cont.)

Explanatory Variables: Sample Means and Standard Deviations

Variables and Definitions	Mean (SD)	
	Men	Women
ETHNIC ORIGIN		
If Mexican or Mexican American	.69 (.47)	.70 (.46)
If Puerto Rican	.13 (.34)	.10 (.31)
If other Hispanic	.18 (.36)	.20 (.21)
INCOME, net family, 1978	$9,817 (9,663)	$10,188 (9,663)
If work-limiting HEALTH problems, 1979	.07 (.25)	.05 (.22)
If ever STOPPED, BOOKED or CONVICTED of CRIME, 1979	.42 (.49)	.18 (.38)
If ever SUSPENDED from school	.23 (.43)	.14 (.34)
λ	.8193 (1.073)	.5176 (.749)
Number in sample	115	96

view and did not attend college or high school after January 1, 1978. The sample may be thus described as Hispanic youth aged 15 to 21 years on January 1, 1978, more than one-half of whom had left school prior to high school graduation.[7] In fact, roughly 30% had at most 9 years of formal schooling and a large proportion of young men and women had either been suspended from school and/or had a possible criminal record.

EMPIRICAL RESULTS

This section is organized into four parts. We first provide a brief rationale for the empirical specifications and then present the transition rate results. Next, because the transition rate coefficients may not be readily interpretable, we present several derivations with employment policy implications; these results were calculated with the Model 1 transition rate results. We then present results from Model 2, the time-dependence form of the transition model.

Specification

Two empirical models, job finding and job leaving, were estimated with two forms of the transition rate model, the time-invariant and time-dependent specifications, shown as equations (11) and (12), respectively. The same set of observed variables in the vector X were used in each model. The choice of X variables was guided by concern for economic and demographic issues. The X vector was fixed. That is, in general, we did not include X vector terms whose values changed over particular employment spells. Admittedly, however, some terms, such as marital status, were first measured in the New Youth Cohort only in the spring 1979 interview; consequently they may involve a change since January 1, 1978, the start of the employment history reference period.

In the theoretical discussion of job finding, the search costs, rate of job offer arrival, and discount rate were linked to the rate of job finding. Direct measures of job search costs and discount rates are not available in the data. We expect, however, that several aspects of psychic costs of job search may be captured in a set of survey questions regarding perceived problems in obtaining (and holding) a good job. These problems may include language problems and not having lived in the United States very long. Thus, we include whether or not the 1979 interview was in Spanish and if the youth lived outside the United States at age 14. As for the discount rate, we expect that youth who have been suspended from school or have had an adverse encounter with police—e.g., those who have been stopped, booked, or convicted—to attach relatively greater weight to immediate gratification of needs. This, in turn, may be an indicator of a greater personal rate of time preference. One might thus expect such persons to have shorter nonwork durations. Yet job search also involved employers' choices and early school leaving, or a police encounter may lead to fewer job offers by employers (and/or an early dismissal if hired). The net effect on job finding of these proxy measures of discount rate level is thus unclear.

A greater rate of positive job offer arrivals, h, is also measured by proxy terms, including a lower local unemployment rate, higher individual educational level, relatively greater age, and the absence of a work-limiting health problem. We expect each term to be associated with a faster rate of job finding.

The final specification also included a number of demographic and environmental terms which may alter the individual's relative taste for work, the individual's ability to allocate time for market work, or the level of market wage rates available to the individual. These factors, which include marital status, family income level (net of the respondent), ethnic origin, educational level, and post-school vocational educational training, may also affect the rate of job finding and job leaving.

Results. Separate transition-rate estimates for Model 1 for the Hispanic male and female youths are shown in Tables 2 and 3. Each of the models were highly significant statistically as measured by a chi-square ratio. The coefficients indicate changes in the logarithm of the transition rate. As such, it may be more convenient to interpret some coefficients in percentage terms. For example, in Table 2, col. 3, we note that Puerto Rican men had a statistically significant and lower rate of job finding than other Hispanic young men. The antilog of the -0.79 coefficient implies that young Hispanic men who listed ethnic origin as Puerto Rican had job-finding rates which were 55% lower than those of otherwise similar Hispanic men in other locations. This particular result is important in terms of one of the main goals of this paper; namely, to examine ethnic differences within the Hispanic American group. Ethnic group differences, however, were not found for Hispanic young women.

Age of the youths in January 1978 varied from 15 to 21 years. As frequently observed in other youth labor studies, age has an important and statistically significant effect on female Hispanic youth labor turn-

Table 2

Determinants of Rates of Job Findings, by Sex

	Young Women		Young Men	
	Model 1	Model 2	Model 1	Model 2
Constant	-21.64** (10.51)	-19.51** (10.54)	-2.32 (8.34)	-4.13 (8.58)
AGE	.76 (.52)	.63 (.52)	-.05 (.40)	.02 (.41)
INCOME	.04** (.02)	.05** (.02)	-.01 (.01)	-.01 (.01)
If EDUCATION, 0-9 yrs	.98 (.91)	.68 (.91)	-.58 (.91)	-.48 (.94)
If EDUCATION, 10 or 11 yrs	.13 (.31)	.10 (.31)	-.09 (.57)	-.06 (.58)
If EDUCATION, 13-18 yrs	-2.17* (1.26)	-2.17* (1.26)	-1.17 (.83)	-1.11 (.83)
If not in U.S. at age 14	.23 (.29)	.37 (.29)	-.15 (.65)	.00 (.66)
If Spanish interview, 1979	.25 (.41)	.25 (.41)	-.32 (.30)	-.34 (.30)
If Mexican American, Chicano, or Mexican	.25 (.29)	.38 (.29)	-.13 (.26)	-.04 (.26)
If Puerto Rican	-.06 (.43)	-.02 (.43)	-.79*** (.30)	-.68** (.31)
If other Hispanic	—	—	—	—
If work-limiting HEALTH	-.48 (.67)	-.55 (.67)	.74** (.28)	.77** (.28)
If MARRIED, 1979	.16** (.06)	.17*** (.05)	-.04 (.06)	-.05 (.06)
If ever SUSPENDED	.30 (.33)	.35 (.34)	-.013 (.219)	.18 (.20)

(table continues)

Table 2 (cont.)

Determinants of Rates of Job Findings, by Sex

	Young Women		Young Men	
	Model 1	Model 2	Model 1	Model 2
If ever STOPPED, BOOKED, or CONVICTED	.33	.46	-.24	-.02
	(.34)	(.36)	(.20)	(.20)
If VOCATIONAL EDUCATION received, 1979	-.83**	-.99**	-1.27**	-1.13**
	(.45)	(.46)	(.60)	(.60)
Local UNEMPLOYMENT RATE, 1979	-.007	-.03	-.16**	-.16**
	(.082)	(.08)	(.06)	(.06)
λ	-.98	-.85	.10	.01
	(.76)	(.76)	(.54)	(.55)
Time dependence, γ	—	.0013***	—	.0009***
	—	(.0004)	—	(.0003)
Log likelihood x (-2)	30.31**	38.03***	39.90***	46.57***
Number of spells	105	105	163	163

Note: Standard errors are in parentheses. Data base in 1979 National Longitudinal Survey of Youth. See Table 1 for means of variables.

*Statistically significant at the 10% level.
**Statistically significant at the 5% level.
***Statistically significant at the 1% level.

Table 3

Determinants of Rates of Job Leaving, by Sex

	Young Women		Young Men	
	Model 1	Model 2	Model 1	Model 2
Constant	18.45* (11.34)	15.59 (11.80)	-11.47* (7.25)	-13.6 (7.35)
AGE	-1.19** (.56)	-1.08* (.58)	.22 (.35)	.28 (.36)
INCOME	-.03** (.02)	-.03** (.02)	-.0004 (.0104)	.005 (.010)
If EDUCATION, 0-9 yrs	-.94 (.97)	-.80 (1.00)	1.02 (.86)	1.07 (.87)
If EDUCATION, 10 or 11 yrs	.50 (.33)	.41 (.34)	.74 (.55)	.77 (.54)
If EDUCATION, 13-18 yrs	2.11 (1.34)	1.99 (1.37)	-1.34 (1.10)	-1.29 (1.10)
If not in U.S. at age 14	.02 (.28)	.03 (.29)	-.49 (.60)	-.40 (.60)
If Spanish interview, 1979	-.26 (.39)	-.25 (.40)	-.03 (.29)	.08 (.30)
If Mexican American, Chicano, or Mexican	-.17 (.33)	-.17 (.32)	-.08 (.25)	.015 (.25)
If Puerto Rican	.21 (.45)	.20 (.44)	.11 (.32)	.19 (.32)
If other Hispanic	—	—	—	—
If work-limiting HEALTH	-.66 (.78)	-.72 (.77)	.42 (.29)	.34 (.29)
If MARRIED, 1979	-.04 (.06)	-.02 (.06)	.12** (.05)	.14 (.06)
If ever SUSPENDED	.09 (.31)	.07 (.31)	.16 (.21)	.26 (.21)

(table continues)

Table 3 (cont.)

Determinants of Rates of Job Findings, by Sex

	Young Women		Young Men	
	Model 1	Model 2	Model 1	Model 2
If ever STOPPED, BOOKED, or CONVICTED	.84**	.84**	-.20	-.26
	(.35)	(.35)	(.18)	(.21)
If VOCATIONAL EDUCATION received, 1979	-.15	-.21	-.98**	-1.13**
	(.39)	(.39)	(.73)	(.60)
Local UNEMPLOYMENT RATE, 1979	-.06	-.06	.12*	-.16**
	(.09)	(.09)	(.07)	(.06)
λ	1.54*	1.34	-.35	.009
	(.81)	(.85)	(.50)	(.55)
Time dependence, γ	—	.0014***	—	.0020***
	—	(.0005)	—	(.0004)
Log likelihood x (-2)	32.51**	41.67***	39.43***	69.35***
Number of spells	99	99	153	153

Note: Standard errors are in parentheses. Data base in 1979 National Longitudinal Survey of Youth. See Table 1 for means of variables.

*Statistically significant at the 10% level.
**Statistically significant at the 5% level.
***Statistically significant at the 1% level.

over rates. Older female youth found jobs more quickly and left jobs more slowly than younger persons.[8]

Family income also has a positive and statistical effect on the rate of job finding of Hispanic young women and a negative and statistical effect on their rate of job leaving. To the extent such women consider nonmarket activities like child care or home production as normal goods, such a result is somewhat unexpected. That is, a young woman whose family has a relatively greater income may have less need to work in the market and can "afford" to do other things. Yet these young women were selected for inclusion in the sample only if they were not attending school. As noted in Table A.1, selected women had lower average income than school attenders. Also, the sample mean family income for women was only about $10,000 in 1977, a figure which is well below the U.S. average for white or black families (and 11% below that for other Hispanic families). Thus the positive association of family income and job finding rate should be interpreted cautiously because of sample selection criteria and possible nonlinear income effects.

Education and training, two important employment policy alternatives of the federal government, are measured here for effects on labor turnover. Education is measured with a set of dummy variables: the reference group has 12 years of education. The only significant relative educational difference is for women. Those with over 12 years of school find jobs more slowly and leave jobs faster than women with 12 years of schooling. Just why this result emerges is not altogether clear, but it is consistent with women with some higher education being relatively more willing to job-shop. Further research is needed on this point, however.

As for training effects on job turnover, work experience prior to Jaunary 1, 1978, was tried in earlier versions of the model but was omitted here due to some measurement problems. Work experience or age have been used by economists as proxy measures for on-the-job training: here we use age. Training is also measured by a dummy variable equal to 1 if the youth was in a post-school vocational or technical training program. Such training negatively and significantly reduces the rate of job finding for both young men and young women relative to other persons who did not receive this training. This result may be due to such persons being more selective, such persons being less desirable from the employer's viewpoint, or some combination of supply and demand considerations. More research is needed to disentangle these effects.[9]

Unemployment rate at the local level was measured as the 1978 county unemployment rate, a term which is a proxy for the overall "tightness" of the job market. The intention is that this term will reflect differences in labor demand level or differences in job offer flow between locations, but obviously, to the extent that supply-related factors also add to unemployment rates, the measure is not exact. Results here are statistically significant only for Hispanic men: the job finding rate is slowed if the unemployment rate is greater. Having found a job, however, means that the rate of leaving the job is positively associated with unemployment in Model 1 and negatively in Model 2. The latter effect is probably due to an interaction between unemployment rate level and the time-varying parameter which changes over duration in a state. The possible interaction, which is not modeled in this paper, means that the negative sign on unemployment should not be interpreted alone and that greater unemployment rates may still lead to faster rates of job leaving, e.g., more layoffs than quits.

English proficiency and sociocultural adjustments of a recent immigrant are also likely to affect individual job search behavior and potential employment tenure. We assume that persons who answered the 1977 NORC interview in Spanish and were living outside the United States at age 14 had such problems. Results obtained here were not statistically significant for either factor. Perhaps NORC needs to develop a better measure of the extent to which English proficiency is a problem.

Several minor results, especially those which were relatively large and statistically significant, should be listed. Marriage, defined here to include living with a nonrelated adult of the opposite sex, is associated with a faster rate of job finding for women. Another result is that a work-limiting health problem is associated with an increased job finding rate for men. As for problems with police, it appears that having been stopped, booked, or convicted has a large and significant effect on female rates of job leaving. Specifically, young women who had an adverse police encounter left jobs 130% faster than other women. Whether such women are the first to be asked to leave by employers or whether they quit more readily cannot be determined here. We can only note that a police encounter will increase female chances of being jobless.

Processed Results

One of the advantages to estimating transition rates is that one may use the rate estimates to predict various outcome measures. In this section, we present the expected duration of work, the expected duration of nonwork, and the long-run (or steady state) probability of joblessness.[10] The predictions are calculated as follows:

The expected duration in state k $= 1/\theta_{kj}$, and

The steady state probability of being in state k $= \dfrac{\theta_{jk}}{\theta_{jk} + \theta_{kj}}$.

These outcomes measures are computed here by predicting case-specific θ_{jk} from the β weights in Tables 2 and 3 and case-specific X values. The average duration of work was 56 weeks for women and 53 weeks for men. Nonwork durations were 33 weeks for women and 22 weeks for men. These nonwork duration differences by sex were the main reason for the steady state joblessness rate differences, 40% for women vs. 32% for men. The high rates of joblessness do vary by economic and demographic factors.

Six different criteria were used to sort the data: ethnic group, local unemployment rate, age, education, English proficiency, and family income. Results shown in Table 4 by different groups thus represent not only the differential β weights associated with the criterion variable in question, but also reflect case-specific values of the X terms.

Subgroup differences among the specific Hispanic subgroups listed in Table 4 were in general not statistically significant at conventional levels in the transition-rate estimates. The Table 4 entry differences for Hispanic subgroups are therefore somewhat tentative. Still, we can note certain differences. Other Hispanic groups, including Cubans, Spanish, and others, do relatively much better in terms of male joblessness rates than Mexican groups or Puerto Ricans. In turn, Mexican groups stay longer at jobs and find jobs faster than Puerto Ricans.

Table 4

Processed Results from Transition Rate Estimates, by Sex and Hispanic Group

	Young Women				Young Men			
	N	Expected Work Duration (Weeks)	Expected Nonwork Duration (Weeks)	Steady-State Nonwork Probability	N	Expected Work Duration (Weeks)	Expected Nonwork Duration (Weeks)	Steady-State Nonwork Probability
Ethnic Group								
All	281	56.03	33.41	.40	426	52.81	21.99	.32
		(38.42)	(23.84)	(.20)		(34.73)	(11.97)	(.14)
Mexican American, Chicano, or Mexican	195	54.60	32.11	.39	286	52.94	22.21	.32
		(37.89)	(24.30)	(.21)		(35.70)	(12.36)	(.14)
Puerto Rican	29	47.57	35.53	.39	55	38.03	27.98	.43
		(36.81)	(21.76)	(.18)		(16.05)	(8.57)	(.11)
Other Hispanic	57	65.22	36.80	.39	85	61.96	17.36	.23
		(39.99)	(23.19)	(.20)		(37.30)	(10.71)	(.09)
Local Unemployment Rate								
If 0 to 5.9%	184	58.87	32.72	.40	261	49.12	17.79	.29
		(42.23)	(18.81)	(.20)		(33.97)	(9.66)	(.12)
If 6% or more	97	50.64	34.72	.40	165	58.66	28.63	.36
		(29.32)	(31.30)	(.20)		(35.27)	(12.30)	(.15)
Age								
If ≤ 18 years	12	16.83	35.94	.67	22	36.47	29.71	.45
		(4.74)	(13.89)	(.05)		(11.49)	(8.20)	(.12)
If 19+ years	269	57.78	33.30	.39	404	53.71	21.57	.31
		(38.33)	(24.20)	(.20)		(35.37)	(12.01)	(.14)

(table continues)

Table 4 (cont.)

Processed Results from Transition Rate Estimates, by Sex and Hispanic Group

	Young Women				Young Men			
	N	Expected Work Duration (Weeks)	Expected Nonwork Duration (Weeks)	Steady-State Nonwork Probability	N	Expected Work Duration (Weeks)	Expected Nonwork Duration (Weeks)	Steady-State Nonwork Probability
Education								
If 0-9 years	111	32.18	36.12	.52	214	47.05	25.93	.38
		(10.07)	(16.31)	(.17)		(23.92)	(8.99)	(.13)
If 10 or 11 years	65	47.24	31.58	.42	136	49.33	16.21	.29
		(27.37)	(19.56)	(.19)		(41.41)	(8.92)	(.13)
If 12+ years	105	86.69	31.69	.27	76	75.28	21.22	.21
		(42.44)	(31.62)	(.16)		(38.78)	(18.28)	(.09)
English Problem								
If Spanish interview	24	57.29	33.17	.40	58	68.94	28.89	.31
		(39.44)	(24.34)	(.20)		(38.15)	(15.97)	(.09)
If no Spanish interview	257	42.57	35.91	.46	368	50.27	20.90	.32
		(21.16)	(17.73)	(.18)		(33.54)	(10.85)	(.15)
Family Income								
If income ≤ $10,000	157	42.58	41.48	.49	304	48.57	21.38	.32
		(20.89)	(26.58)	(.17)		(31.13)	(10.67)	(.13)
If income > $10,000	124	73.06	23.19	.29	122	63.39	23.50	.30
		(47.79)	(14.46)	(.18)		(40.70)	(14.66)	(.16)

Local unemployment rate was measured here as a continuous variable in the analysis but split into a dummy variable to develop the Table 4 entries. A greater unemployment rate is associated with a much greater long-run joblessness rate for men, 36% vs. 29%, a result which is primarily due to an increased length of an expected nonwork spell. No direct effect of a local unemployment rate change was found on the joblessness rate of women. Still, the component parts, work and nonwork durations, did change.

Age of the youth is a proxy for a number of employment-related factors. Some employers may prefer older youth or be prevented by state laws or insurance clauses from hiring youth aged 16 or 17 years. Also, older youths may simply be more willing to stay longer at a job, especially if they have car payments, family obligations, and other financial needs. Age was a highly significant determinant of rates of entering and leaving jobs. Results in Table 4 show these effects dramatically. A three-year age difference (three years is the difference in the average age in the above 18 year group, 20 years, and the below 18 year old group, 17 years) is associated with a threefold increase in the expected duration of a work spell for women and a similar but less sharp change for men. For women, the expected duration of work increases from 17 weeks to 58 weeks between ages 17 and 20 years. The length of time not working also appears to fall in this period. As a result of both factors, shortened nonwork spells and lengthened work spells, the steady-state joblessness rates fall sharply.[11]

Three other results presented in Table 4 concern educational attainment, English proficiency, and family income. We focus here on education and family income, two potential target criteria for employment policies. We do not discuss the English proficiency results because we feel that they were poorly measured.

For both sexes, the long-run joblessness rate for high school graduates and youth with college is about one-half that for youths with at most 9 years of formal education. Greater family income is also associated with a lower joblessness rate, especially for women. The policy implications are that Hispanic youth from low-income families should be aided in some manner, be it training or job-finding assistance or some other scheme. Also, Hispanic youths who have left school prior to secondary school completion should be encouraged to return to school so as to enhance their subsequent employment chances.

Time Dependence. The results presented so far have been for Model 1, which assumes that transition rates do not vary over time. Yet there are several reasons why such an assumption may not be appropriate. For instance, a change in economic conditions during a spell of work (or nonwork) may cause a change during the spell in the rate of job finding (or job leaving). Also, a decline in the reservation wage over the duration of time not working may increase the rate of job finding. If such effects are the only source of time variation, then the time-invariant model has biased constant terms, but the bias in other coefficients is usually slight.[12] We therefore show here the effect of a time-varying parameter only on the constant rate.

The time-varying parameter estimates shown in Tables 2 and 3 are highly significant statistically for young men and young women. For both sexes and both work and nonwork categories, exit rates increase over time in the state. For youth in a nonwork state, such a result is consistent with several aspects of job search theory, including a declining reservation wage rate and an increasing spatial distance in job search efforts. As for employed workers, sorting by firms or employees during early tenure could account for this time dependence. Firms need to decide if they wish to keep the worker, while the young worker needs to decide if the job matches his or her career goals. Similar ideas were mentioned earlier by Jovanovich (1979) as to why the rate of job leaving for employer persons need not be monotonically declining, but may increase early in the tenure period. For a sample of mainly teenaged youth, it is not really surprising that positive time dependence is obtained.

CONCLUSION

In this study we have considered the determinants of the rates of entering and leaving work for a national sample of young Hispanic men and women. Data studied were continuous work histories for individuals in the period from January 1978 to spring 1980. Youth studied here, aged 15 to 21 years at the start of the period, did not attend school in this two-year period and were unlikely to return to school. Roughly 70% did not have a high school diploma and 43% had at most 9 years of education. Also, 26% of the youth lived abroad at age 14, and 35% were married. To adjust for special sample selection criteria, we estimated and included Heckman's lambda, which is presented in Appendix A.

We have examined one aspect of Hispanic youth employment problems: the association of high joblessness rates with high labor turnover rates.

Three aspects of the study are important. First, relatively little research has been directed at Hispanic youth employment. This study adds to that literature by describing Hispanic youth labor turnover behavior and by relating a number of economic and demographic issues to this behavior. Family income, marital status, and post-school vocational education, for example, were found to have serious and statistically significant effects on turnover rates, especially for women. Age and local unemployment rate levels also were associated with differential rates of labor turnover. Prior studies have also found these factors, plus family income and others, to be important determinants of labor market behavior.

Second, several policy alternatives were implicitly considered to see how they might affect Hispanic youth rates of entering and leaving employment--e.g., labor demand variation (as measured by local unemployment rate) and education and training provision. While above-average local unemployment rates were associated with lower rates of job finding for men, but not for women, no clear picture emerges as to whether or not this policy or that is better. Instead, one is left with a set of policy-relevant observations:

- Hispanic youth joblessness rates are quite high, between 30 and 40%, and these rates are due primarily to relatively long spells of nonwork after a job loss.
- Age, education, and family income level all sharply affect Hispanic youth employment behavior and thus call for "targeting" employment policies according to these criteria.
- Sex differences in labor turnover results also were found, primarily due to the fact that female nonwork duration was nearly 50% longer than that of young Hispanic men. Employment policy targeting by sex for Hispanic youth may therefore also be appropriate.

- English-language training may be needed for Hispanic youth, but results obtained here do not support such a policy. Data better suited to measure this effect may suggest that such training is appropriate.

A third and final comment concerns the method of analysis. Most of the results presented were for a time-invariant model which assumed an exponential distribution of "wait" times at work or nonwork. A time-varying transition rate model was also presented in which exit rates were found to increase during time at work or not at work. Yet the earlier results obtained with the constant rate model were affected only slightly in that the main change was in the constant term and not, for example, the relative education effects on job finding. More research is needed to understand more fully the nature of this time dependence.

APPENDIX A. AN ADJUSTMENT FOR POTENTIAL SELECTION BIAS

The main focus of this paper is the early post-school labor market behavior of Hispanic youth. To create an analysis file from the original longitudinal data file, only youth who had left regular school on or before January 1, 1978, were included. The risk is that systematic subgroup differences in the characteristics associated with school-attenders vs. school-leavers may blur one's ability to obtain an unbiased estimate of the relationship between a youth's particular characteristic and rate of job finding (or job leaving). The problem cannot be overcome merely by adding more and more right-hand-side variables, since unobserved subgroup differences may also lead to this bias.

James Heckman (1979) refined a statistical method which enables consistent parameter estimates to be obtained in the case in which one, first, has a binary choice, include/not include, and second, has an ordinary least-squares regression for the outcome variable. In the present paper, the situation is somewhat different. Heckman assumed a bivariate normal distribution of the error terms in the binary choice and the outcome variable models. In this paper, we estimate g, Heckman's selection bias adjustment factor, by maximum-likelihood probit methods. This much is exactly as Heckman developed it. The difference arises in the second step, in that the outcome variable(s) estimated here is the instantaneous rate of finding or leaving a job, an assumed continuous-time Markov process which we also estimate by maximum likelihood methods. The statistical properties of Heckman's approach in the context of such a turnover analysis have yet to be developed. See Stephenson (1982) for a related application. Intuition suggests that less bias will be present with λ included than it it were omitted.

Table A.1 presents sample means for the selected and nonselected subgroups. As noted, the youth here were older, from lower-income families, and had less formal education than youths continuing in school or college. In addition, from the other differences listed it appears that early school leavers may have sharp social, economic, and cultural differences from the nonselected youth. Early school leaving appears to be associated with having lived outside the United States at age 14 and other potential English-language problems, which may in turn be related to early post-school and labor market success.

Table A.2 shows maximum likelihood estimates computed by Heckman's lambda-probit routine. The specification is intended to reflect tastes for schooling and budget constraints. Several points should be noted. First, each model is highly significant as indicated by a chi-square statistic (which is, -2 times the difference between the log likelihood ratio of the estimated model from the likelihood based only on the intercept). Second, for both young men and young women, age and, to some extent, education, are the dominant variables determining continued enrollment in regular school or not. In addition, for young Hispanic men, not having been in the United States at age 14 is associated with a lower rate of school retention.

These probit coefficients in Table A.2 were used to predict the probability of being in school for all youth, $F(Z)$, and a λ for each youth was computed as $\frac{f(Z)}{1-F(Z)}$, where $f(Z)$ is the density function evaluated at the estimated probability. This λ was then used an an instrument in the exit rate empirical estimations.

Table A.1

Sample Means of Selected and Nonselected Hispanic Youth Aged 16-21 Years in 1979[a]

	Selected	Not Selected
Age	21.33 (1.25)	19.23 (1.59)
Family income, 1978 dollars (000)	9.986 (9.642)	11.092 (10.462)
If education, 0-9 years	.43 (.49)	.25 (.43)
If education, 10 or 11 years	.24 (.43)	.45 (.49)
If education, 13-18 years	.04 (.19)	.13 (.33)
If not in U.S. at age 14	.26 (.44)	.04 (.21)
If married	.40 (.49)	.06 (.25)
If interviewed in Spanish	.12 (.33)	.04 (.18)
If problems in getting a job due to English	.30 (.46)	.14 (.35)
Number in sample	211	433

[a] The main sample selection criterion was not to have attended school or college after January 1, 1978. The selected sample includes 115 men and 96 women.

Table A.2

Probit Coefficient Results for Sample Selection

	Men		Women	
	Probit Estimates	Mean	Probit Estimates	Mean
Constant	14.47*** (3.45)	1.00	22.69*** (3.99)	1.00
Age/10	6.64*** (1.61)	2.00	-10.68*** (1.88)	1.99
Family income/($000)	-.008 (.005)	10.75	-.005 (.009)	10.71
If education, 0-9 years	1.96 (4.42)	.33	-4.38 (4.86)	.29
If education, 10-11 years	10.08** (5.11)	.40	-5.00 (5.11)	.35
If education, 13-18 years	1.50*** (.41)	.09	2.22*** (.43)	.11
If not in U.S. at age 14	-1.27*** (.40)	.12	.10 (.31)	.11
If education, 0-9 years*Age	-.18 (.22)	6.45	.13 (.24)	5.45
If eduation, 10-11 years*Age	-.52** (.25)	7.82	.23 (.25)	6.77
χ^2 with 8 d.f.	238.77***		200.03***	
Number in sample	321		323	

** and *** indicate statistical significance at 1% level and 5% levels, respectively.

NOTES

[1] If $w^* < W$, the market wage offer, the job is accepted and search stops.

[2] Lancaster (1979, pp. 940-941).

[3] The Basic Model description closely follows that in Stephenson (1982).

[4] This section is similar to that in Tuma (1979).

[5] See Tuma and Robins (1980) concerning the mathematical derivations of these outcome measures.

[6] In the empirical work, I tried to examine three, not two, states. This choice is technically feasible and exploits the available data more fully.

[7] Because of potential selection bias due to having screened out youth still in school, an adjustment factor was created using a routine developed by Heckman (1979). The auxiliary equations used for that calculation are presented in the Appendix.

[8] Inclusion of this age term is also important as a way of mitigating estimation problems resulting from not controlling for initial conditions.

[9] These education and training effects are described here as person-specific. In fact, the unit of analysis was spells of work and nonwork. To the extent that education and the number of spells are related, these results may be over- or understated.

[10] Details regarding the mathematical derivations of these expressions are in Tuma and Robins (1980).

[11] Of course, some of these processed age results may be due to the effect of other factors such as education or marriage. For example, if older youths are more likely to have graduated from high school and youths with this amount of education leave jobs more slowly, then an age-specific subsample work-exit prediction really reflects not only differences in subsample ages weighted by the age coefficient, but subsample differences in education attainment weighted by the work-exit rate coefficient for education. To decompose these components is beyond the scope of this paper.

[12] Robins, Tuma, and Yaeger (1980, p. 564). This relatively slight change in rate coefficients between Model 1 and Model 2 is found here, with the exception of the unemployment rate effect in the male results for job leaving.

REFERENCES

Bjorklund, A., and B. Holmlund. 1981. The duration of unemployment and unexpected inflation. *American Economic Review*, *71*, 121-131.

Burdett, K., N. Kiefer, D. Mortensen, and G. Neumann. 1981. A Markov model of employment, unemployment and labor force participation: Estimates from DIME data. Unpublished manuscript.

Clark, K. B., and Lawrence H. Summers. 1979. Labor market dynamics and unemployment: A reconsideration. *Brookings Papers on Economic Activity*, *1*, 13-60.

Feinberg, Robert. 1977. Search in the labor market and the duration of unemployment: Note. *American Economic Review*, *67*, 1011-1013.

Flinn, Christopher, and James J. Heckman. 1981. Models for the analysis of labor market dynamics. Discussion Paper no. 80-3, Economic Research Center, National Opinion Research Center, Chicago.

Hall, Robert. 1972. Turnover in the labor force. *Brookings Papers on Economic Activity*, *3*, 709-756.

Heckman, James. 1979. Sample selection bias as a specification error. *Econometrica*, *47*, 153-167.

Heckman, James J., and George J. Borjas. 1980. Does unemployment cause future unemployment? Definitions, questions and answers from a continuous time model of heterogeneity and state dependence. *Economica*, *47*, 247-283.

Jovanovich, Boyan. 1979. Firm-specific capital and turnover. *Journal of Political Economy*, *87*, 1246-1260.

Lancaster, Tony. 1979. Econometric methods for the duration of unemployment. *Econometrica*, *47*, 939-956.

Lancaster, Tony, and Stephen Nickell. 1980. The analysis of re-employment probabilities for the unemployed. Journal of the Royal Statistical Society, A, 143, 141-165.

Leighton, Linda, and Jacob Mincer. 1979. Labor turnover and youth unemployment. Working Paper no. 378, National Bureau of Economic Research, Cambridge, Mass.

Lippman, S.A., and J.C. McCall. 1976. Job search in a dynamic economy. Journal of Economic Theory, 12, 365-390.

Okun, A. 1981. Prices and quantities: A macroeconomic analysis. Washington, D.C.: Brookings Institution.

Robins, Philip K., Nancy B. Tuma, and K. E. Yaeger. 1980. Effects of the Seattle and Denver Income Maintenance experiments on changes in employment status. Journal of Human Resources, 15, 545-573.

Stephenson, S., Jr. 1982. A turnover analysis of joblessness for young women. Research in labor economics, Vol. 5. Greenwich, Conn.: JAI Press.

Tuma, Nancy B. 1979. Invoking rate. Unpublished manuscript, Department of Sociology, Stanford University, July 5.

Tuma, Nancy B., and Michael Hanna. 1979. Dynamic analysis of event histories. American Journal of Sociology, 84, 820-854.

Tuma, Nancy B., and Philip K. Robins. 1980. A dynamic model of employment behavior: An application to the Seattle and Denver Income Maintenance experiments. Econometrica, 48, 1031-1052.

Section III: Educational Transitions

Educational Transitions of Whites and Mexican Americans

Neil Fligstein
Department of Sociology
University of Arizona
National Opinion Research Center

Roberto M. Fernandez
Department of Sociology
University of Chicago

This work was partially supported by a contract from the National Commission on Employment Policy. We would like to acknowledge the comments of Glen Cain, Carol Jusenius, Alejandro Portes, and Marta Tienda. Any opinions expressed are those of the authors and do not reflect the position of the Commission.

Educational Transitions of Whites and Mexican Americans

INTRODUCTION

It is well known that Mexican Americans attain lower levels of education than whites in American society (U.S. Commission on Civil Rights, 1978; U.S. Bureau of the Census, 1979; National Center for Education Statistics, 1980). The reasons for this are the subject of much speculation and surprisingly little research. This paper aims to provide evidence for the various factors that might explain the disparities between white and Mexican-American educational attainment.

In order to understand how and why Mexican Americans achieve a lower educational level than whites, it is necessary to consider a variety of elements, some of which are unique to the situation of Mexican Americans in the United States, and others of which reflect the general process of educational attainment in the United States. Toward this end, we first summarize the general model of educational attainment that has developed in sociology. Second, we briefly review the educational history of Mexican Americans. Finally, we construct a model of the process of educational attainment for Mexican Americans and attempt to identify the differences and similarities in that process for Mexican Americans and whites.

THE GENERAL MODEL OF EDUCATIONAL ATTAINMENT

Formal education is often seen as a process intervening between an individual's family of origin and later occupational and economic attainments (Blau and Duncan, 1967; Duncan, Featherman, and Duncan, 1972; Jencks et al., 1972; Featherman and Hauser, 1978). The amount of education an individual receives is thought to be a product of a complex process in which one's background, intelligence, academic performance, and school setting, combined with social-psychological factors such as peer, parental, and teacher encouragement and personal goals in occupation and education, are transformed into educational attainment.

The most important set of factors that affects an individual's educational attainment is the individual's background (Blau and Duncan, 1967; Duncan, Featherman, and Duncan, 1972; Jencks et al., 1972; Featherman and Hauser, 1978; Mare, 1980). It is generally thought that higher-income families, in which parents often have more education and high occupational statuses, tend to support children in educational endeavors, because the parents realize that in order for their children to have the same lifestyle they must obtain an education that prepares them for some career. Persons in less affluent families may place less emphasis on education for their children because the costs of college and higher education relative to the prospective returns on this investment do not justify the expenditure. The four variables usually used to index these background factors are father's education, mother's education, father's occupational status, and parental income. In general, it has been found that all of these variables exert about equal effect on the child's educational attainment (Duncan, Featherman, and Duncan, 1972; Hauser, 1971; Jencks et al., 1972; Sewell and Hauser, 1975; Shea, 1976). This finding suggests that a variety of mechanisms are operating to convert socioeconomic background into educational attainments. Parent's income would seem to most affect the ability of parents to pay for their children's education and related expenses, while parent's education appears to tap the value that parents place on education for their children. Father's occupational status is also an indication of the value placed on education insofar as professional occupations, which usually require much training, tend to have high status, and blue collar occupations, which require less formal training, have lower status.

Sewell and his associates have tried to clarify more precisely how various social-psychological processes intervene between background and educational attainment (Sewell, Haller, and Strauss, 1957; Sewell and Shah, 1968; Sewell, Haller, and Portes, 1969; Sewell and Hauser, 1975). Their work has tried to assess how the advantages of background are translated through social-psychological mechanisms into effects on eventual educational attainment. The basic theoretical notion is that an individual's educational attainment will be influenced by relations to other people. Certain of these people will assume differential significance in children's lives and help shape the educational goals the child holds. Three groups have been deemed relevant to this process: parents, peers, and teachers. It has been found that parents and peers are the most important "significant others," followed by teachers. Hauser (1971) and Otto and Haller (1979) conclude that the major mechanism by which background is translated into educational achievement is the parents' attitude about what the child's educational goals should be.

Two other variables that help explain educational achievement are intelligence (or perhaps more accurately, scholastic ability) and academic performance (Hauser, 1971; Jencks et al., 1972; Sewell and Hauser, 1975). Intelligence measurement, however, is related to background, ethnicity, and language in a problematic fashion. High intelligence is more likely to be measured in students who share middle-class backgrounds and values than in those from different ethnic groups that hold nonstandard values, perhaps speak another language,[1] and have different cultural experiences (Cordasco, 1978; Aguirre, 1979).

The school itself is thought to aid educational attainment in a number of ways. For instance, class size, facilities, and teacher's motivation are obvious factors that could affect educational attainment. However, after years of trying to show school effects net of student background and neighborhood factors, most students of the matter have concluded that there has been very little independent impact of schools (Coleman et al., 1966; Hauser, 1971; Jencks et al., 1972; Jencks and Brown, 1975; Hauser, Sewell, and Alwin, 1976). In looking at blacks, research on high school contextual effects (Armor, 1972; Thornton and Eckland, 1980) and school desegregation (Wilson, 1979; Patchen, Hoffman, and Brown, 1980) has been more successful. For Chicanos, there is also evidence suggesting that school-level variables have an independent effect on scholastic performance. Carter and Segura (1979) stress the role of self-fulfilling prophecies due to teacher expectations—that is, since teachers assume that Mexican Americans are poor students, they behave in a manner that hinders a student's ability to achieve.

The last factor considered important in the educational attainment process is an individual's educational and occupational aspirations. Indeed, Sewell, Haller, and Portes (1969) report that the best predictor of completed schooling is the student's educational aspirations (but see

Alexander and Cook, 1979, for a different view). Occupational aspirations also determine education, as one's career plans may require a degree. Both educational and occupational aspirations are in turn determined to a large extent by background, expectations of significant others, intelligence, academic performance, and the school environment.

In sum, the research in sociology on educational attainment has clearly demonstrated that social background affects educational outcomes mainly through the transmission of values and attitudes toward education. Parents provide economic, psychic, and emotional support for their children that is translated into educational achievement. Schools appear to selectively reinforce those students who have this kind of motivation and allow them to succeed. Through this kind of complex social-psychological process, student aspirations for education and occupations are shaped, and their behavior follows accordingly. The other important pattern to note is that students with higher measured intelligence tend to have higher educational attainment, as do those with higher grades. Academic performance itself is a function of background and values as well as intelligence. Both intelligence and grades are also related to background in that some components of these factors originate in the advantages of growing up in a middle-class environment (Duncan, Featherman, and Duncan, 1972; Sewell and Hauser, 1975).

THE UNIQUE SITUATION OF MEXICAN AMERICANS

Mexican Americans have had a history of discrimination in schools (see Carter and Segura, 1979). When the Spanish conquered Mexico, one of the first institutions they destroyed was the indigenous native school (Carter, 1970; Weinberg, 1977a, 1977b; Carter and Segura, 1979). The Spanish set up schools to teach the use of Spanish at the exclusion of the Indian languages. In 1821, Mexico won its independence from Spain. Universal education was part of the Mexican constitution, but was never implemented in any systematic fashion. The major source of education was the Catholic Church. Even so, most of those who received any formal schooling were of Spanish descent.

From 1846 to 1848, Mexico and the United States fought a war over the territories that now constitute the southwestern United States. Following the war, many Mexicans chose to stay on their lands and remain in the United States. Weinberg (1977a) estimates that at the time there were 200,000 Mexicans living in Texas, Arizona, New Mexico, and California. The Mexican Americans who remained were, for the most part, treated as a source of cheap labor, and the Americans who moved into the Southwest generally kept power, both political and economic, to themselves. While we today think of Mexican Americans as immigrants or non-English-speaking foreigners, the truth is that their presence in the Southwest predates U.S. control of the area.

From 1848 to the early part of the twentieth century, Mexican immigration to the United States was rather slow. It began to increase from 1909 on, and has fluctuated in a pattern similar to immigration in general since then (Grebler, Moore, and Guzman, 1970). After World War II, Mexican immigration increased. The bracero program brought many Mexicans to the United States as temporary farm laborers (Meier and Rivera, 1972). Since the end of that program in 1964, Mexican migration has continued at a high level. Most Mexican migrants are unskilled laborers who come to the United States and take low-paying jobs. The Mexican population in the United States tends to be concentrated in low-paying jobs, lives in cities (mostly in barrios), and uses Spanish as the main language (Jaffe, Cullen, and Boswell, 1980).

Most who have written on the issue have stressed that Mexican-American students have been systematically discriminated against in the schools (see Weinberg, 1977a, 1977b, for an overview). Legally, Mexican Americans were not subject to discriminatory racial laws as were blacks. In practice, however, Mexican-American students have attended segregated schools; often their educational facilities are understaffed and lack such basic resources as libraries (Weinberg, 1977a; Carter and Segura, 1979). Most studies (Carter, 1970; Vasquez, 1974; Carter and Segura, 1979) see student underachievement and alienation as a direct consequence of the inferiority of the school setting for Mexicans.

The basic mechanism by which schools have intentionally or unintentionally reduced the likelihood that Mexican-American students will complete high school has been school delay—repeating a particular grade. By compelling students to repeat grades, schools have made alternatives to schooling more attractive to Chicanos (Carter and Segura, 1979; supported by statistics in U.S. Bureau of the Census, 1979). Carter and Segura see this process as one in which the student is pushed out, because he or she faces a difficult school situation and is expected to fail. The other part of this process is that as school becomes less attractive, job opportunities become more attractive. Hence, students may also be pulled out of school by the opportunity for a job (Duncan, 1965; Edwards, 1976).[2]

A remaining issue is the effect of cultural differences on educational attainment of Mexican Americans. The key argument usually put forward is that Mexican-American culture contains different values that are not conducive to educational attainment. This point of view has both a positive and a negative connotation. Some have argued that the Mexican-American child is culturally deprived, has little intellectual stimulation, is not taught to value education, and has a bad self-image (Bloom, Davis, and Hess, 1965; Gordon and Wilkerson, 1966; Heller, 1966). Mexican-American culture has been characterized as family-centered, patriarchal, and oriented toward the extended family. The primary cultural values are thought to be machismo, fatalism, and orientation toward the present. Educators have tended to view Mexican-American students as victims of this culture, and their low educational achievement is thought to reflect these values and orientations. Most empirical evidence does not, however, support this view of the Mexican family (see, for example, Coleman et al., 1966). Further, there is no evidence that Mexican students have a lower self-image than white students (DeBlassie and Healy, 1970).

A more benign point of view has been expressed by Ramirez and Castaneda (1974), who argue that each culture possesses distinct cognitive styles by which it relates to and organizes the world. Mexican Americans are what they call "bicultural" and have a "cognitive style" that they refer to as "field dependent." The term bicultural indicates that Mexican Americans have had to adjust to two cultures and therefore have learned to express themselves in the cognitive styles of both their own culture and the dominant white culture. Cognitive style refers to learning, human relation, and communication styles. The dominant value-clusters within Mexican-American culture, according to Ramirez and Castaneda, center around family, community, and ethnic group, and center on interpersonal relations, status and role definition in family and community, and Mexican Catholic ideology. These differing cognitive styles result in different learning styles: Mexican-American children learn better in cooperatve rather than competitive settings. They are also more other-oriented in general, and rely more heavily on family, community, and friends for self-perception. The term field dependence implies that Mexican-American children do better in verbal tasks and in tasks that relate to other people, whereas white children do better on analytic tasks.

The argument of Ramirez and Castaneda suggests that the cultural differences between Mexican Americans and whites reflect different values concerning what is important in relations with other people. They do not see Mexican-American children as culturally deprived; rather, they have a different culture containing its own set of rules and justifications whose practices are antithetical to the dominant, white middle-class culture. Schools thus become the site of the destruction of Mexican-American culture.

These cultural differences, combined with the schools' perception and treatment of Mexican-American students, go far toward explaining the low educational attainment of Mexican Americans. Given a hostile school environment and the need to work to help support a household (either one's biological family or one's own children), it is not surprising that Mexican Americans leave school at an early age (Haro, 1977; Laosa, 1977).

Two other issues arise in discussion of Mexican-American scholastic performance: length of residence in the United States, and language. Some studies have found that immigrants tend to be a highly motivated, self-selected group, and therefore show higher achievement, perhaps after an initial disadvantage due to language and customs (Blau and Duncan, 1967; Chiswick, 1978). Fernandez (1982) and Nielsen and Fernandez (1981) speculate that this high level of motivation may be passed on to the immigrants' children, thus explaining why the children of more recent migrants achieve better in high school. Kimball (1968) and Baral (1979) suggest that long-time residents may become "ghettoized" and therefore achieve poorly compared to more recent migrants. Others (e.g., Featherman and Hauser, 1978, Chap. 8), however, find that immigrants are at a socioeconomic disadvantage which these researchers attribute to difficulties of language and culture. In addition, it has been shown with 1970 Census data that immigrants have lower levels of education (Jaffe, Cullen, and Boswell, 1980) which can, through the general mechanisms described above, result in lower educational achievement for the child.

With regard to language, past research has found that Spanish speakers in a predominantly English-speaking society experience difficulties in school and work owing to language (Garcia, 1980; Tienda, 1982). Other studies have found that bilingualism is an asset, both in school (Peal and Lambert, 1962; Fernandez, 1982; for reviews see also Lambert, 1975; Cummins, 1977, 1981) and in certain job markets (Lopez, 1976). The institutional response for both of these positions has been some form of bilingual education. Many members of the Mexican-American community favor bilingual-bicultural programs that are oriented toward the maintenance of both the English and the Spanish language. Others, with more assimilationist views, emphasize the importance of English proficiency over and above the use of Spanish; they support transitional bilingual programs that are designed to teach English to the Mexican-American child with little regard for maintaining the Spanish tongue. Given these conflicting goals, it is not surprising that there is little agreement about the effectiveness of the different programs that have been implemented (see Fligstein and Fernandez, 1982, for a review of bilingual education programs).

MODELS OF THE EDUCATIONAL ATTAINMENT PROCESS FOR MEXICAN AMERICANS

It is now appropriate to propose a model of educational attainment in general and to describe how such a model would be modified to take into account the special situations of Mexican Americans. There are really two parts to these models: variables that have been found to pertain to all subpopulations, and variables that, in light of the above discussion, can be expected to affect Mexican Americans disproportionately. The background characteristics common to all groups include father's education, mother's education, father's occupation, family income, and number of siblings. Parental education and father's occupation index both the socioeconomic status of the family and parents' attitudes about the desirability of education, while family income measures the ability of the family to pay for education. Number of siblings indicates how many children must share the family income. Controlling other factors, the larger the family, the more likely that the respondent will be drawn out of school and into the labor force to help support the family (see Rumberger, 1981, for a similar argument). We also include a measure for gender, since past research has shown that men and women vary in educational attainment (Alexander and Eckland, 1974). The social-psychological measures of the educational aspirations and expectations of parent, peer, teacher, and respondent would also be expected to affect educational outcomes.

From the review of the experiences of Mexican Americans, two additional types of background variables need to be included—migration history and linguistic practices. In both cases, past research (described above) has shown mixed results concerning educational attainment. Much of the discrepancy in these findings may be due to the varying conceptions and measures of migration recency and linguistic practice employed by the different studies. Though we cannot resolve the issue here, we note that it is important to incorporate measures of migration and language into models of educational attainment for Mexican Americans.

We next suggest a set of school-level variables as predictors of educational transitions. These include whether or not the school is public or private, the racial and ethnic composition of the school, and such measures of school quality as the dropout rate and the teacher-student ratio. Recently, Coleman, Kilgore, and Hoffer (1981) have endeavored to show that minorities in private schools tend to achieve better than those in public schools (but see Lewis and Wanner, 1979, for contrary evidence). Measures of school racial composition (percentage black and percentage Hispanic) are included in our model because past research on school integration has shown that it has small but positive effects on scholastic achievement for blacks (U.S. Commission on Civil Rights, 1967; Lewis and St. John, 1974; Wilson, 1979). Though we know of no similar research concerning Mexican Americans, owing to the obvious importance of segregation issues for Hispanics (see Naboa, 1980), we test whether similar effects can be discerned with our data by including percentage Hispanic within the school in our model. As a general measure of the holding power of the respondent's high school, we include the percentage who drop out as a predictor of these educational transitions. Last, in accord with the extensive literature on school effects (e.g., Coleman et al., 1966; Bidwell and Kasarda, 1975; for a review see Spady, 1976), we use the number of students per teacher in the respondent's high school as a measure of school resources.

In addition to these general school variables which should affect both non-Hispanic whites and Mexican Americans, we are interested in curriculum measures that should be important for Mexican Americans, i.e., whether the student was enrolled in a program of English as a Second Language or some form of transitional bilingual education program. As was argued above, it is important to assess whether or not these programs aid in increasing educational attainment.

Finally, we consider some community-related variables. The local unemployment rate in the respondent's area of residence can be considered a measure of the "pull" factors in the local labor market which might draw youth out of school (see Duncan, 1965; Edwards, 1976). Another community variable, urban residence, is included because living in a large city would make one less likely to complete school because of the greater number of non-school options available in cities.

ANALYSIS

The data set used in these analyses is the U.S. Department of Labor's National Longitudinal Survey (NLS) of 1979. The choice of data set presented problems. The ideal data for this project must include information on ethnicity, migration history, family background, language, education, schools and currciulum, educational aspirations and expectations, IQ, grades, and must be longitudinal. No data set exists that covers all of these elements. The NLS data, while limited in age range and lacking certain variables, proved to contain the greatest amount of relevant information.[3]

The data analysis strategy requires defining relevant subpopulations and dependent variables. Since the sample members are quite young, many of the respondents are still in school. We therefore divided the data into three groups: those aged less than or equal to 18 years of age, those aged 19-22, and those who had completed high school. The first sample is used to determine which factors are related to the respondent's being in school or having dropped out. The dependent variable is a dummy variable coded "zero" if the respondent dropped out and "one" if the respondent was still in school.[4] The second sample is used to determine what factors affect high school completion. The dependent variable here is coded "zero" if the respondent did not finish high school and "one" if the respondent did. The third sample, composed of those who had completed high school, is used because we are interested in what affects a person's chances of going to college. Since high school graduation is a prerequisite for entrance to colleges and universities, we decided to restrict our attention to the sample of interest, i.e., high school graduates. The dependent variable is coded "zero" if the respondent did not go to college and "one" if the respondent did.

We divided the sample in this manner for the following reasons. If we had used completed years of schooling as a dependent variable for these young people, we would have encountered the limitation that many of our respondents had not completed schooling. It makes more sense to consider school transitions, such as staying in school, completing high school, and entering college. Unfortunately, age is also going to play a role in the schooling process; if we were to consider using only those who had dropped out of high school or who had completed high school, we would truncate our sample by excluding those still in school.[5] By breaking the samples down into age groups, we eliminate this problem. The first sample answers the question, "Given that respondents are younger than 18, what are the causes of their dropping out of school versus their being in school?" The second sample assesses the determinants of high school completion among those who are old enough to be eligible to complete high school.

One other dependent variable is used in the two high school samples: school delay. It was argued earlier that school delay was a major factor in keeping Mexican-American students from completing high school. Since delay and dropping out could be seen as simultaneous events, it might not be reasonable to include delay as an independent variable (although this reasoning may be incorrect, since the sequence usually is that being held back is followed by dropping out, whereas the delay could easily be seen as preceding dropping out). However, it is sensible to examine the determinants of delay. School delay is defined as the (median age in the population in the highest grade the respondent completed) - (the age of the respondent at the highest grade completed).

Two ethnic groups are analyzed separately here: whites and Mexican Americans. (Hispanic groups other than Mexican Americans were too few to be included.) We assigned respondents to these ethnic groups on the basis of self-identification. Smith (1980) shows that among various methods that have been used to classify respondents into ethnic groups in surveys, self-identification is the most efficient technique.

Two techniques were employed in the data analysis: ordinary least squares (OLS) regression and logistic regression. The OLS regression is used when school delay, a continuous measure, is the dependent variable. Since the transition variables are dichotomous, OLS regressions would result in estimates that are no longer minimum-variance unbiased, because of heteroskedasticity. A logit specification provides an adequate solution to this problem (Theil, 1971, pp. 631-633).

Explanatory Variables

The independent variables are entered into the analyses in two sets: family background, and school and social environment variables.[6] In our theoretical discussion, we suggested variables relevant to the general population and variables relevant to Mexican Americans. Here, we incorporate both types of measures into the two sets of variables.

Nine measures of family background are included in the model: (1) father's and (2) mother's education in years of schooling; (3) a dummy variable coded zero if the respondent was female and one if the respondent was male; three dummy variables coded zero if (4) the respondent,

(5) the mother, and (6) the father were born in the United States, coded one if born elsewhere; (7) a dummy variable coded zero if the interview was conducted in English and coded one if the interview was conducted in Spanish; (8) a dummy variable coded one if the respondent has a non-English mother tongue and zero otherwise; and (9) the number of siblings in the respondent's family. No measures of family income and father's occupation were included because of high levels of missing data (over 40%).

The school and social environment measures reflect characteristics of the surrounding area. The local community is indexed by two measures: the local unemployment rate in 1979, and a dummy variable coded one if the respondent was living in a Standard Metropolitan Statistical Area and coded zero if not.

The school variables are of two types: school environment and curriculum. The first measures tap the quality of the education and the racial/ethnic composition of the school. Only one of the school variables has relatively high nonmissing data. This is a dummy variable coded zero if the respondent attended a public school and coded one for a private school. The other school variables were not assessed for about half of the sample. In order to use the data available, we constructed a dummy variable called "nonresponse school items" that is coded zero if the respondent does not have school data and one if data exists. All variables utilizing the school data are coded zero for those individuals for whom the school data are missing. If those who responded are not systematically more likely to have stayed in school, completed school, or entered college, then this dummy variable should not affect the outcome

Mexican Americans. The dependent variables include dropping out or staying in high school, completing high school, entering college, and school delay. The strategy is first to enter background variables, and next school and community variables. In this way, we should begin to understand the schooling process for the two groups and the way in which they differ and are similar.

Descriptive Statistics

Table 1 presents means and standard deviations for the subpopulations by ethnic group. Considering the high school populations, we see that Mexican Americans are less likely to be in school or to have graduated from high school. Most striking is that only 57% of Mexican Americans over 18 years of age have graduated from high school, as compared to 83% of whites. However, when we consider the population of high school graduates, we find that Mexican Americans attend college at a higher rate than whites (66% vs. 58%), despite their generally lower socioeconomic background (see below). The Mexican Americans who finish high school appear to be a motivated group who have pursued the educational process and go on to college at a somewhat higher rate than whites.[7] This suggests that the primary barriers to Mexican-American school achievement are encountered early in the educational life course—i.e., before and during high school.[8] Another indication of this is that Mexican Americans are about half a year older in a grade than whites (see the means for school delay).

The background variables show that Mexican Americans come from lower-status backgrounds: their parents have much less education than do

Table 1

Means and Standard Deviations for Whites and Mexican Americans in the Three Sample Populations

Variable	White						Mexican American					
	< 18 Years		> 18 Years		HS Grad		< 18 Years		> 18 Years		HS Grad	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
% in high school	.90	.30					.83	.38				
% high school grad			.83	.37					.58	.49		
% enter college					.58	.49					.66	.48
School delay	.50	.72	.68	1.01			.91	1.00	1.11	1.32		
Father's education	11.73	3.45	12.03	3.60	12.55	3.43	7.29	4.60	6.90	4.67	8.02	4.56
Mother's education	11.58	2.56	11.89	2.62	12.28	2.45	7.07	3.99	6.96	4.31	8.17	4.21
Sex	.50	.50	.46	.50	.46	.50	.47	.50	.48	.50	.47	.50
Number siblings	3.20	2.17	3.22	2.08	3.04	1.92	4.96	2.76	5.16	2.92	4.36	2.37
Nativity	.04	.19	.03	.17	.03	.17	.25	.43	.28	.45	.13	.34
Father's nativity	.05	.22	.05	.22	.05	.22	.41	.49	.45	.50	.36	.48
Mother's nativity	.06	.24	.05	.22	.05	.22	.45	.50	.47	.50	.39	.49
Language as child	.11	.31	.13	.34	.13	.34	.93	.26	.94	.23	.93	.25
Spanish interview	.02	.14	.02	.13	.02	.13	.05	.21	.07	.25	.03	.18
SMSA	.64	.48	.68	.47	.69	.46	.71	.46	.80	.40	.80	.40
Unemployment rate	6.34	2.16	6.14	2.18	6.12	2.20	6.64	3.20	5.97	2.71	6.07	2.53
Nonresponse school items	.54	.50	.51	.50	.53	.50	.47	.50	.40	.48	.49	.50
% Hispanic in school	3.18	8.86	2.89	8.53	2.77	7.88	31.82	32.60	28.13	33.87	35.13	35.39
% black in school	6.31	12.77	5.63	11.75	5.68	11.45	4.11	9.71	3.23	9.17	2.84	6.76
% dropout in school	11.04	20.13	8.28	14.72	7.90	13.72	13.16	19.70	9.98	15.33	11.69	15.65
Teacher-student ratio	.04	.02	.04	.03	.04	.03	.03	.03	.03	.03	.04	.03
Public-private	.06	.24	.08	.27	.09	.29	.04	.19	.03	.18	.04	.19
Nonresponse transcript	.70	.46	.66	.47	.69	.46	.58	.49	.44	.50	.53	.50
ESL course	.002	.05	.00	.05	.00	.04	.04	.19	.03	.16	.02	.15
Bilingual education	.02	.13	.02	.15	.02	.15	.07	.26	.05	.22	.06	.24
N	(3,465)		(2,280)		(1,871)		(587)		(296)		(173)	

Source: National Longitudinal Survey of Youth, 1979.

to a statistically significant degree. From our discussions with the people who collected the data, there is no reason to believe that such bias exists. The four measures of school environment are the percentage of students in high school who are Hispanic, the percentage of students who are black, the percentage of students who dropped out of the high school, and the pupil-teacher ratio.

The curriculum data for individuals were collected independently of the rest of the NLS data. Only about 40% of the respondents have these data, which are taken from high school transcripts. A dummy variable called "nonresponse transcript" was created, coded zero if the respondent did not have transcript data and one if the respondent did. Here too, zero is assigned to the missing transcript data. We should thus be able to assess if the presence of the transcript data is systematically related to the outcomes. The two curriculum variables are coded at the individual level; they are dummy variables coded zero if the respondent did not take a course entitled English as a Second Language or Bilingual Education and coded one if the respondent did.

No measures of social-psychological attributes such as educational aspirations and expectations of peer, respondent, or parent are included in these models, for two reasons. First, some of these variables were not measured. Second, some were measured at the time of the interview, and therefore it is difficult to determine whether the attitude caused the relevant educational transition, or vice versa. To use the measures probably requires longitudinal data.

In sum, the analytic strategy is to examine the causes of schooling outcomes for three relevant age cohorts of non-Hispanic whites and whites; they come from much larger families; and respondent and both parents are much more likely to be foreign-born. The language measures also show large differences: for all three populations, a small percentage of whites (11-13%) spoke a foreign language as a child; the comparable figure for Mexican Americans is over 90%. A small percentage (2%) of respondents who identified themselves as white elected to take the interview in Spanish; among Mexican Americans the range was 3-5%. Since none of those who were interviewed in Spanish spoke English as their mother tongue, we can interpret these two variables as classifying respondents into three language types: Spanish monolinguals (those interviewed in Spanish), bilinguals (interviewed in English and reporting Spanish as the mother tongue), English monolinguals (interviewed in English and reporting English as the mother tongue). Following this interpretation in our sample the Mexican-American population is largely bilingual, with relatively few at either monolingual extreme (see Skrabanek, 1970, and Garcia, 1980, for supporting evidence).

The school and community variables show smaller differences across ethnic groups than do the background variables. Mexican Americans are somewhat more urbanized than whites and tend to go to segregated schools and to schools with relatively high dropout rates. Not surprisingly, in light of their generally lower-status backgrounds, Mexican Americans are less likely to attend private school.

RESULTS FOR THOSE AGED 14-18

There are two dependent variables in these analyses: whether or not the respondent is enrolled in school, and school delay. We will first consider the determinants of the school enrollment variable for each ethnic group. We will then compare the models across groups. Finally, we will examine the regressions for school delay and compare those results. Tables 2 and 3 present the results.

School Enrollment

For whites in this age group, four of the nine family background measures significantly affect the likelihood of being in school. Both measures of parental education positively affect that likelihood.[9] Those with more siblings are less likely to be in school, which would imply that, other things being equal, respondents from large families are more likely to be drawn out of school in order to help support the family of origin. None of the nativity variables affect the likelihood of being in school, but respondents who were interviewed in Spanish are more likely to be out of school.[10] Two of the measures of school and social environment are significantly related to enrollment in school. One of these, whether or not the individual has a transcript, is of no theoretical interest; as expected, students with transcript are more likely to be in school. The finding that whites from schools with a high percentage of blacks are less likely to be in school could reflect a number of factors --a poorer neighborhood, a more dangerous school setting, or a poorer quality educational system. However, there are no effects from local economic conditions, nor from other school or curriculum measures.

Looking at the results for Mexican Americans in Table 2, in the model containing only background variables we see that neither measure of parental education affects the likelihood of being in school. As is the case for whites, respondents with a greater number of siblings are less

Table 2

Logit and OLS Regression Results for High School Attendance Among Whites and Mexican Americans Aged 18 or Younger

Independent Variable	Dependent Variable: High School Attendance[a]							
	Whites				Mexican Americans			
	b	SE(b)	b	SE(b)	b	SE(b)	b	SE(b)
Father's education	.16**	.02	.15**	.02	.05	.03	.08*	.04
Mother's education	.10**	.03	.10**	.03	.02	.04	.01	.04
Sex	.07	.12	.06	.12	.05	.24	.11	.26
Number of siblings	-.11**	.02	-.11**	.02	-.14**	.04	-.16**	.05
Nativity	-.27	.43	-.17	.44	-1.65**	.38	-1.81**	.42
Father's nativity	.10	.42	.16	.43	-.29	.37	-.32	.39
Mother's nativity	.73	.45	.84	.46	1.24**	.41	1.42**	.43
Language as child	-.05	.23	-.04	.23	.49	.50	.58	.54
Spanish interview	-.80*	.31	-.75*	.32	-1.46**	.45	-1.27*	.52
SMSA			-.07	.13			-1.02**	.34
Unemployment rate			.04	.03			-.04	.04
Nonresponse school items			.14	.16			.75*	.38
% Hispanic in school			-.01	.01			-.01*	.006
% black in school			-.01*	.004			-.04**	.01
% dropout in school			-.004	.003			.02	.01
Teacher-student ratio			3.90	2.92			4.14	8.37
Public-private			.04	.28			.30	.73
Nonresponse transcript			.51**	.15			.69	.35
ESL course			-1.34	.99			1.03	.86
Bilingual education			1.41	.86			.63	.72
Constant	-.27		-.84		1.63		1.95	
R^2								
D	.06		.07		.12		.18	
N			(3,465)				(587)	

Source: National Longitudinal Survey of Youth, 1979.

*Statistically significant at the 5% level.
**Statistically significant at the 1% level.

[a] Results from logistic regression.

likely to be in school. This is evidence that young Mexican Americans may be out of school because their families need additional income. Respondents born in Mexico are also less likely to be in school, although those whose mothers are foreign-born are more likely to be in school.[11] If the interview was conducted in Spanish, the respondent is less likely to be in school. In terms of our discussion above, this might be interpreted as a negative effect of Spanish monolingualism as compared to English monolingualism (the excluded category). The fact that the mother-tongue dummy variable is not significant means that bilinguals are just as likely to be in school as are English monolinguals.

With the addition of the school and social environment variables, three additional effects appear. Respondents who live in an SMSA are less likely to be in school. This variable may function as a proxy for being in a barrio environment, where the community may be drawing students out of school by offering employment (albeit at low wages). In addition, if students face poor employment prospects after high school graduation, there is little incentive for them to remain in school. (See the argument of Stinchcombe, 1964, regarding the effect of future labor market prospects on behavior in school.) Two school-related measures are significant: a large number of both blacks and Hispanics in the school is related to a lower likelihood of being in school. This is probably a reflection of school quality. Neither of the variables measuring whether or not a respondent was enrolled in a Bilingual Education or ESL course has a statistically significant effect on staying in school. This result is not surprising, in light of the fact that these programs are quite heterogeneous[12] (see Fligstein and Fernandez, 1982).

In summary, large families, Spanish-language dominance, foreign birth, urban environment, and lower-quality schools all operate to lessen the likelihood that the Mexican-American student will remain in school.

The major differences between Mexican Americans and whites center on the parental education and nativity variables. Mexican-American students with highly educated or foreign-born mothers are more likely to be enrolled in school, though the respondent's foreign birth is related to not being in school. For whites, both mother's and father's education affect the probability of being in school, while none of the nativity variables affect school attendance. These differences show that being an immigrant lowers Mexican-American school attendance but has no effect for whites. Furthermore, mothers play important roles in the socialization process for Mexican Americans, as indicated by the effects of mother's nativity and education.

School Delay

The equation predicting school delay for whites 18 and under shows results similar to those predicting school enrollment, although some differences are apparent. In the regression analyses, a negative coefficient indicates less delay; a positive coefficient indicates more delay. Education of both parents significantly affects school delay: the more education the parents have, the less delay the student experiences. Male respondents are older in grade on average, as are respondents from large families. For whites, being born in a foreign country increases the probability of being older in grade.

Table 3

Logit and OLS Regression Results for School Delay Among Whites and Mexican Americans Aged 18 or Younger

Independent Variable	Dependent Variable: School Delay[a]							
	Whites				Mexican Americans			
	b	SE(b)	b	SE(b)	b	SE(b)	b	SE(b)
Father's education	-.02**	.004	-.01**	.004	-.02	.01	-.02	.01
Mother's education	-.04**	.006	-.033**	.006	-.02	.01	-.01	.01
Sex	.19**	.02	.18**	.02	.17*	.08	.16*	.07
Number of siblings	.03**	.006	.03**	.006	.06**	.015	.06**	.02
Nativity	.18*	.08	.17*	.08	.66**	.11	.69**	.11
Father's nativity	-.06	.07	-.05	.07	.04	.11	.04	.11
Mother's nativity	.02	.07	.02	.07	-.23*	.10	-.19	.11
Language as child	.04	.05	.04	.05	.13	.15	.13	.15
Spanish interview	.15	.08	.13	.08	.23	.19	.23	.19
SMSA			-.06*	.03			-.26**	.09
Unemployment rate			-.006	.006			-.06**	.01
Nonresponse school items			.009	.03			.03	.10
% Hispanic in school			-.001	.001			.000	.001
% black in school			.000	.001			.002	.004
% dropout in school			.002**	.001			-.002	.002
Teacher-student ratio			-1.31*	.54			-.15	2.20
Public-private			-.02	.05			-.42*	.19
Nonresponse transcript			-.05	.03			-.20	.10
ESL course			.28	.22			-.34	.23
Bilingual education			-.14	.10			.21	.17
Constant	.89		.98		.62		1.25	
R^2	.07		.08		.20		.26	
D								
N			(3,439)				(580)	

Source: National Longitudinal Survey of Youth, 1979.

*Statistically significant at the 5% level.
**Statistically significant at the 1% level.

[a] Results from OLS regression.

When the school and social environment variables are added, three additional effects appear. Respondents in SMSAs are less delayed, implying that rural schools hold students back more frequently. Two interesting school effects clearly reflect school quality and school strategy. A respondent in a school with a high dropout rate is more likely to be older in grade, which could indicate that those schools use grade retention more frequently and therefore have more discouraged students, who later drop out. There is also a statistically significant effect of the teacher-student ratio; students who attend schools with more teachers per student tend to be less grade-delayed; presumably, this reflects the fact that teachers are able to spend more time with students individually and students are therefore less likely to fail.

The school-delay regression for Mexican Americans is also similar to the one predicting school enrollment. Those in large families and those of foreign birth are older in grade. Those whose mothers are foreign-born are less likely to be grade-delayed. Variables related to mothers exert effects throughout the Mexican-American equations: mother's education and mother's nativity are strong determinants of children's educational attainment. One difference between the model for school attendance and the model for delay is apparent: young men are more likely than young women to experience school delay.

Among the school and social environment variables, three effects are statistically significant. Respondents who live in an SMSA are less likely to experience school delay. A high unemployment rate is related to less school delay, implying that Mexican-American students may be trading off schooling for work, leaving school when work is available.

Mexican Americans in private schools are less delayed than those in public schools. Whether this is due to self-selection of better students into private schools or to differences in school policies cannot be determined here.

Three conclusions are evident. First, parental education tends to lower school delay for whites, but has little effect for Mexican Americans. This suggests that school delay for Mexican Americans is not directly related to socioeconomic background; it may instead reflect other influences—perhaps the school policies emphasized by Carter and Segura (1979). Second, non-U.S. origin is strongly related to delay for Mexican Americans; being foreign-born increases school delay for Mexican Americans by almost half a year. Finally, among Mexican Americans, foreign-born mothers have children who are less delayed in their progress through school. This is consistent with the results for school attendance that show mothers to be important in the educational process of Mexican Americans.

RESULTS FOR THOSE AGED 19-22

Tables 4 and 5 present models of high school completion and school delay for the older age group.

High School Completion

In the equation containing only the background variables, for whites we find that the largest effects are those of parental education. This result accords with the literature reviewed above indicating that parents' education is a key determinant of children's education. Young

Table 4

Logit and OLS Regression Results for High School Completion Among Whites and Mexican Americans Aged 19-22

Independent Variable	Dependent Variable: High School Completion[a]							
	Whites				Mexican Americans			
	b	SE(b)	b	SE(b)	b	SE(b)	b	SE(b)
Father's education	.15**	.02	.14**	.02	.03	.04	.02	.04
Mother's education	.24**	.03	.23**	.03	.10*	.04	.12*	.05
Sex	-.34**	.12	-.37**	.13	-.02	.27	-.05	.29
Number of siblings	-.14**	.03	-.13**	.03	-.13**	.05	-.15**	.06
Nativity	.38	.48	.47	.51	-1.75	.42	-1.51**	.47
Father's nativity	1.54**	.47	1.54**	.49	.16	.40	.00	.43
Mother's nativity	-.33	.39	-.16	.41	.57	.41	.41	.43
Language as child	.13	.22	.11	.22	.42	.60	.40	.63
Spanish interview	-.63	.39	-.67	.40	-.23	.60	.36	.68
SMSA			.07	.14			.48	.39
Unemployment rate			.02	.03			.04	.06
Nonresponse school items			.21	.16			.34	.41
% Hispanic in school			-.02*	.006			.014*	.006
% black in school			-.001	.005			-.02	.02
% dropout in school			.01**	.004			.002	.01
Teacher-student ratio			9.67**	2.91			-7.17	9.21
Public-private			1.94**	.53			.16	.88
Nonresponse transcript			.30	.16			.69	.39
ESL course			-1.37	1.27			.06	.93
Bilingual education			.75	.74			1.28	.84
Constant	-2.17		-2.69		-.06		-1.25	
R^2								
D	.13		.15		.20		.26	
N			(2,280)				(296)	

Source: National Longitudinal Survey of Youth, 1979.

*Statistically significant at the 5% level.
**Statistically significant at the 1% level.

[a] Results from logistic regression.

Table 5

Logit and OLS Regression Results for School Delay Among Whites and Mexican Americans Aged 19-22

Independent Variable	Dependent Variable: School Delay[a]							
	Whites				Mexican Americans			
	b	SE(b)	b	SE(b)	b	SE(b)	b	SE(b)
Father's education	-.01*	.007	-.01	.007	-.03	.02	-.02	.02
Mother's education	-.04**	.01	-.04**	.01	.008	.02	.008	.024
Sex	.24**	.04	.24**	.04	.35*	.15	.35*	.15
Number of siblings	.04**	.01	.04**	.01	.10**	.03	.10**	.03
Nativity	.05	.15	.05	.15	.53*	.22	.46	.24
Father's nativity	-.19	.13	-.18	.13	.13	.22	.19	.23
Mother's nativity	.20	.13	.17	.13	-.23	.21	-.11	.22
Language as child	-.04	.07	-.06	.07	.01	.32	-.02	.33
Spanish interview	.39*	.16	.37*	.16	.55	.30	.44	.32
SMSA			-.01	.05			-.33	.20
Unemployment rate			-.01	.01			-.02	.03
Nonresponse school items			-.09	.05			.19	.21
% Hispanic in school			.007**	.002			-.002	.003
% black in school			.001	.001			-.001	.009
% dropout in school			.001	.001			-.005	.006
Teacher-student ratio			-.03	.82			1.55	4.86
Public-private			-.01	.08			-.33	.42
Nonresponse transcript			.05	.05			-.26	.20
ESL course			.28	.46			.44	.50
Bilingual education			-.11	.15			-.38	.38
Constant	1.06		1.16		.41		.85	
R^2	.04		.05		.17		.20	
N			(2,239)				(287)	

Source: National Longitudinal Survey of Youth, 1979.

*Statistically significant at the 5% level.
**Statistically significant at the 1% level.

[a] Results from OLS regression.

men are less likely to complete high school than young women, which could reflect their greater opportunities in the labor market. Respondents from larger families (measured by number of siblings) are also less likely to finish high school, suggesting the importance of family obligations on school continuation decisions. Four of the school variables bear a statistically significant relation to finishing high school. Respondents in schools with a high percentage of Hispanics or schools with high dropout rates tend to finish high school less often; this could reflect school quality, social environment, or a number of other factors. A higher teacher-student ratio positively affects the probability of high school completion. Finally, controlling other factors, attending a private school significantly increases one's chances of high school completion. Our data do not permit us to determine whether this is due to selection into private schools of students who are less likely to drop out or to aspects of the school environment that encourage high achievement.

In the results for Mexican Americans, we see from the equation with only the background variables that mother's education significantly increases the likelihood of high school completion, whereas father's education does not. As we have noted above, this suggests that Mexican-American mothers play a key role in their children's educational outcomes. The more siblings a respondent has, the less likely he or she is to complete school. Finally, persons of foreign birth finish high school less frequently. Neither of the language measures affects high school completion--i.e., English monolinguals are no more likely to finish high school than either bilinguals or Spanish monolinguals. When the school and social environment variables are added, only the percentage of Hispanics in the school affects high school completion to a statistically significant degree. Mexican Americans in Hispanic schools tend to complete high school more frequently. This could imply that a Mexican-American student culture aids high school completion.

When we compare whites and Mexican Americans, we find that in general the background variables are more powerful predictors of high school completion for whites. Both parents' education strongly affects high school completion for whites, while only the mother's education does so for Mexican Americans. White males are much less likely to complete high school than white females, while Mexican-American females and males are equally likely to do so. Being in a Hispanic high school aids school completion for Mexican Americans and deters it for whites. Also, foreign-born Mexican Americans are much less likely to finish high school than are whites of foreign birth. Taken together, these results show that for whites, high school completion is highly related to parental education and the respondent's sex, while for Mexican Americans high school completion is determined mostly by their mother's education and their own nativity.

School Delay

School delay for those whites who are older than 18 has determinants similar to those of high school completion. In the equation with only background characteristics, parental education is associated with less school delay, while males are more likely to be delayed than females. Respondents from large families also experience more school delay. There is one anomalous result in this table, concerning those whites who were interviewed in Spanish: they are more likely to have been delayed in their progress through school. Only 2% of the white sample was in this category; this coefficient should therefore be interpreted cautiously. Only one additional effect appears in the equation with the school and social environment variables. Respondents who attended a school with a high percentage of Hispanics were more likely to have experienced grade delay. This could reflect school quality, but it also could be tapping school policy. If the literature on school delay for Hispanics is correct, then schools with Hispanic concentrations may more frequently use grade delay as a policy (see Carter and Segura, 1979).

Only two background variables affect the school delay of Mexican Americans over age 18: sex of respondent, and number of siblings. Respondents who are male or who come from a large family are more likely to have been delayed in schooling. Again, the language variables do not affect school delay. None of the school and social environment or curriculum variables have statistically significant effects on high school completion.

Here too, the most interesting difference between groups is that parental education is highly related to school delay for whites, and less so for Mexican Americans. The lower mean and greater variance of Mexican-American parental educational attainment is perhaps one reason that there is no relationship between delay and parental educational attainment. The school policies that have been alleged to be the major cause of Chicano school delay (Carter and Segura, 1979) might be another reason. The much smaller R^2s for delay among whites in both age populations indicate that being delayed is a much more random process for whites then it is for Mexican Americans, despite the fact that Chicanos are much more grade-delayed and have much more variance than do whites (see Table 1). Apparently, even without the measures of school policy that Carter and Segura (1979) emphasize, our model is much more efficacious for Mexican Americans than for whites.

RESULTS FOR THOSE WHO WERE HIGH SCHOOL GRADUATES

The final set of equations concerns the determinants of college attendance, given that the respondent finished high school (see Table 6). These models are misspecified insofar as parental income is left out of the equation. Since college costs money, this omission raises problems.[13]

The equation with only the background variables for whites shows that both measures of parental education positively affect the likelihood of college attendance. Respondents from larger families are less likely to attend college. (Note that this variable could proxy for the family's ability to pay for college.) Two interesting effects emerge concerning nativity. If either parent was born in a foreign country, the respondent is more likely to attend college. This may be due to immigrants' high levels of motivation (Chiswick, 1978; Fernandez, 1982; Nielsen and Fernandez, 1981). Only one of the variables concerning school and social environment significantly affects college attendance: if one attends a private school, one is more likely to go to college.

We now turn to the determinants of Mexican-American college attendance for this group of respondents. Only two family background

Table 6

Logit Regression Results for College Attendance by White and Mexican-American High School Graduates

Independent Variable	Whites				Mexican Americans			
	b	SE(b)	b	SE(b)	b	SE(b)	b	SE(b)
Father's education	.19**	.02	.18**	.02	-.05	.05	-.06	.06
Mother's education	.18**	.03	.17**	.03	.16**	.06	.17**	.06
Sex	-.02	.10	-.01	.11	-.32	.36	-.49	.38
Number of siblings	-.12**	.03	-.12**	.03	-.06	.08	-.04	.09
Nativity	.23	.40	.29	.41	-.96	.62	-.62	.73
Father's nativity	1.08**	.35	1.05**	.35	.53	.54	.45	.58
Mother's nativity	.78**	.36	.72**	.36	1.39**	.53	1.27*	.59
Language as child	.16	.18	.12	.18	-.48	.75	-.58	.79
Spanish interview	.23	.41	.18	.42	-1.12	.91	-1.23	.96
SMSA			.18	.12			.78	.49
Unemployment rate			-.04	.03			.12	.08
Nonresponse school items			.09	.13			-1.24*	.55
% Hispanic in school			.014	.007			-.001	.007
% black in school			.002	.004			-.06	.03
% dropout in school			.00	.004			.03	.02
Teacher-student ratio			.53	2.12			12.65	12.64
Public-private			.97**	.21			.28	1.23
Nonresponse transcript			.11	.13			.13	.46
ESL course			-.32	1.47			-2.66	1.45
Bilingual education			.13	.34			.45	.97
Constant	-3.96		-3.85		.21		-1.06	
D	.16		.17		.12		.19	
N			(1,871)				(173)	

Source: National Longitudinal Survey of Youth, 1979.

*Statistically significant at the 5% level.
**Statistically significant at the 1% level.

variables affect college attendance: mother's education and mother's nativity. Mexican Americans with immigrant mothers are more likely to go to college, while the higher the mother's educational attainment, the more likely the respondent is to attend college. When the measures of school and social environment are added, only the dummy variable for the school data affects with statistical significance the likelihood of college attendance.[14]

The major differences across groups for the college equations center on two factors: the lack of effect of certain variables for Mexican Americans and the importance of those variables for whites, and the fact that mothers appear to be more important for Mexican-American college attendance, whereas both parents are important to whites.

SUMMARY AND CONCLUSION

How do the educational attainment processes of whites and Mexican Americans compare? Among whites, the general factor of family background appears to be the major determinant of educational attainment. In particular, parental education and number of siblings significantly affect staying in school, graduating from high school, and attending college. Parents' education to some degree is replicated in their children. There are also interesting effects concerning parental nativity. Respondents with foreign-born fathers tend to finish high school more frequently, and those with either parent foreign-born enter college more frequently. There also are some school effects on educational attainment of whites. Higher teacher-student ratios affect school delay and high school completion, while respondents in private schools tend to complete school more frequently and attend college more often. Finally, whites stay in school a shorter time and finish high school less often when blacks and Hispanics are present, effects which are probably due to the generally inferior quality of black and Hispanic schools (Coleman et al., 1966; National Center for Education Statistics, 1980).

For Mexican Americans, general family background factors are also important—family size and parental education, particularly mother's education, are related to school attendance and (negatively) to delay. Among the background variables that we expected could disproportionately affect Mexican Americans—migration history and language type—only migration history is consistently related to high school and college attendance and to delay in high school.[15] Foreign-born respondents are less likely to be in school and more likely to have been delayed. However, having a foreign-born mother seems to have salutary effects on the respondent's educational attainment. This fact, combined with the importance of mother's education, is evidence that mothers play a critical role in Mexican-American socialization.

When we consider the school and social environment variables, no patterns emerge. The curriculum measures show that those students who at some time were enrolled in ESL or Bilingual Education courses perform no differently from those never enrolled in such courses. This result is probably due to two problems in our data: (1) the large numbers of missing values on the curriculum variables; and (2) the coarseness of the measures. We do not know what type of bilingual education program the students were enrolled in, the length of the program, or its quality.

It is clear that high school completion is a major barrier to Chicano school attainment. Those who do graduate from high school go on to college at higher rates than do whites, despite their lower socioeconomic origins. From these analyses, the effects of particular educational policies (as measured by the school and curriculum measures) on the scholastic performance of Mexican Americans are equivocal. Segregation appears to hurt Chicanos, but little else seems to matter. Most important in explaining poor high school attendance by Mexican Americans are the general family background factors of low parental education and large family size. Factors more specific to the Mexican-American experience in the United States—language patterns and migration history—also appear to affect Chicano educational attainments. There is some evidence that Spanish monolingualism is a hindrance to Mexican-American school achievement, and foreign birth appears to have educational costs. However, while it is important to understand the costs that Mexican Americans pay, it should be emphasized that they do not suffer from a simple lack of cultural assimilation, for another fact of Chicano culture appears as a benefit--i.e., mothers who are foreign-born seem to instill higher levels of motivation that lead to better academic achievement.

NOTES

[1] Jensen (1961, 1980) reports results that show that standard IQ tests are not measuring the scholastic ability of Mexican-American children accurately. He concludes that the causes of the inaccuracies revolve around the bilingualism of most Chicanos.

[2] See Nielsen (1980) for a discussion of push-out and pull-out factors as explanations of Hispanic dropout rates.

[3] Two other data sets were considered: the Survey of Income and Education (1976), and High School and Beyond (1980). The Survey of Income and Education cannot be used since it contains no information on family background and school performance. The High School and Beyond study only samples 10th and 12th graders at one point in time, making it impossible to assess why people completed or did not complete relevant school transitions. When subsequent waves of the High School and Beyond survey become available, it will be the best choice for studying these issues. High School and Beyond oversampled Hispanics and contains detailed language data, achievement test performance, and a broad range of background characteristics.

[4] Those students who had completed high school in this age group were coded as being in school.

[5] In essence, this problem can be characterized as a selectivity bias (Heckman, 1979). One could argue that the appropriate econometric solution to this problem is to use a correction for such bias. Unfortunately, in cases where the ultimate dependent variable itself is dichotomous, this correction is not straightforward. It requires use of

a technique known as bivariate probit analysis (Ashford and Snowden, 1970), which is not computationally simple. We therefore chose the alternative strategy of splitting the sample.

[6] The family factors alone produce a reduced form model. This reduced form provides a baseline from which the effect of potential policy variables (school and environment) can be assessed.

[7] See Nielsen (1980) for an elaboration of this selection argument.

[8] This is not to say that there is equality of opportunity for Mexican Americans to attend college. For example, they are much more likely to attend two-year colleges than are whites. For a general discussion concerning the plight of minorities in two-year colleges, see Olivas (1980).

[9] Because mother's and father's educations are highly correlated, multicollinearity could be a problem. In none of our samples is the correlation greater than .46. In analyses not presented here, we investigated the sensitivity of these estimates to the exclusion of one or the other parental education measure. The analyses confirmed that our results are not due to multicollinearity.

[10] Recall that ethnic identity is based on self-report in these data. A small number of respondents who identified themselves as "white" were interviewed in Spanish (see Table 1).

[11] In all the analyses that follow preliminary investigation has shown that the pattern of effects of the nativity variables is not due to multicollinearity.

[12] For two reasons, we chose not to combine these measures into one measure that one might call "additional language training." First, ESL and Bilingual Education programs have quite different goals. Second,

being in an ESL course tends to be negatively associated with school outcomes, while Bilingual Education has positive effects, although both are statistically insignificant. Combining the measures would only introduce greater heterogeneity.

[13] A measure of parental income was included in the NLS, but since 60% of the population has missing data, we excluded the variable from our analysis.

[14] This measure implies that those with school data were less likely to attend college. Obviously, this is not a substantively interesting result.

[15] The fact that language type does not appear as a consistent predictor may be due to the distribution of the language variables. By the criteria listed above, roughly 6-7% of these populations are English monolingual, 3-5% are Spanish monolingual, and the vast majority (87-90%) are bilingual. Though this distribution may make it difficult to identify any effects of language type, it is consistent with other studies (Skrabanek, 1970; Nielsen and Fernandez, 1981) that show somewhat similar distributions, albeit not as small at the monolingual extremes. It is worth noting that the one language effect for Mexican Americans (i.e., the negative effect of Spanish monolingualism in the population under 18 years of age) is not in conflict with those studies that show positive language effects (Fernandez, 1982; Peal and Lambert, 1962) since these studies compare bilinguals with English monolinguals.

REFERENCES

Aguirre, Adalberto. 1979. Intelligence testing and Chicanos: A quality of life issue. Social Problems, 27, no. 2 (Dec.), 186-195.

Alexander, Karl, and Martha Cook. 1979. The motivational relevance of education plans: Questioning the conventional wisdom. Social Psychology Quarterly, 42, no. 3, 202-213.

Alexander, Karl, and B. K. Eckland. 1974. Sex differences in the educational attainment process. American Sociological Review, 39, 668-682.

Armor, David. 1972. School and family effects and black and white achievement: A reexamination of the USOE data. In F. Mosteller and D. P. Moynihan, eds., On equality of educational opportunity. New York: Vintage Books.

Ashford, J., and R. Snowden. 1970. Multivariate probit analysis. Biometrics, 26, 535-546.

Baral, David. 1979. Academic achievement of recent immigrants from Mexico. NABE Journal, 3, 1-13.

Bidwell, Charles, and J. Kasarda. 1975. School district organization and student achievement. American Sociological Review, 40, (February), 55-70.

Blau, Peter, and O. D. Duncan. 1967. The American occupational structure. New York: John Wiley.

Bloom, Benjamin, Allison Davis, and Robert Hess. 1965. Compensatory education for cultural deprivation. New York: Holt, Rinehart, and Winston.

Carter, Thomas. 1970. Mexican Americans in school: A history of educational neglect. New York: College Entrance Examination Board.

Carter, Thomas, and Robert Segura. 1979. Mexican Americans in school: A decade of change. New York: College Entrance Examination Board.

Chiswick, Barry. 1978. The effect of Americanization on the earnings of foreign-born men. Journal of Political Economy, 86, 897-921.

Coleman, James S., et al. 1966. Equality of educational opportunity. Washington, D.C.: U.S. Department of Health, Education, and Welfare.

Coleman, James S., Thomas Hoffer, and Sally Kilgore. 1981. Public and private schools. Report to the National Center for Education Statistics. University of Chicago. Mimeo.

Cordasco, Francesco. 1978. The bilingual-bicultural child and the question of intelligence. New York: Arno Press.

Cummins, Jim. 1977. Viewpoint: Psycholinguistic evidence. In Center for Applied Linguistics, Bilingual education: Current perspectives; Vol 4: Education. Arlington, Va.: Center for Applied Linguistics.

Cummins, Jim. 1981. Empirical and theoretical underpinnings of bilingual education. Journal of Education, 163, 16-29.

DeBlassie, Richard, and Gary Healey. 1970. Self-concept: A comparison of Spanish-American, Negro, and Anglo adolescents across ethnic, sex, and socioeconomic variables. Las Cruces, N.M.: New Mexico State University.

Duncan, Beverly. 1965. Dropouts and the unemployed. Journal of Political Economy, 73, 121-134.

Duncan, O. D., David L. Featherman, and Beverly Duncan. 1972. Socioeconomic background and achievement. New York: Seminar Press.

Edwards, Linda. 1976. School retention of teenagers over the business cycle. Journal of Human Resources, 11, no. 2 (Spring), 1-13.

Featherman, David L., and Robert M. Hauser. 1978. Opportunity and change. New York: Academic Press.

Fernandez, Roberto M. 1982. Bilinguals and scholastic achievement: Some baseline results. Paper to be presented at the American Sociological Association meetings, San Francisco.

Fligstein, Neil, and Roberto M. Fernandez. 1982. The causes of Hispanic educational attainment: History, patterns, and analyses. Report to the National Commission on Employment Policy. Mimeo.

Garcia, Steve. 1980. Language usage and the status attainment of Chicano males. Center for Demography and Ecology, Working Paper no. 80-2, University of Wisconsin-Madison.

Gordon, Edmund, and Doxey Wilkerson. 1966. Compensatory education for the disadvantaged. New York: College Entrance Examination Board.

Grebler, Leo, Joan Moore, and Ralph Guzman. 1970. The Mexican American people. New York: Free Press.

Haro, Carlos. 1977. Introduction [to a special issue], Aztlan, 8, 1-10.

Hauser, Robert M. 1971. Socioeconomic background and educational performance. Washington, D.C.: American Sociological Association.

Hauser, Robert M., William H. Sewell, and D. F. Alwin. 1976. High school effects on achievement. In W. H. Sewell, R. M. Hauser, and D. L. Featherman, eds., Schooling and achievement in American society. New York: Academic Press.

Heckman, James J. 1979. Sample selection bias as a specification error. Econometrica, 47, 153-162.

Heller, Celia. 1966. Mexican-American youth: Forgotten youth at the cross-roads. New York: Random House.

Jaffe, A. J., Ruth Cullen, and Thomas Boswell. 1980. The changing demography of Spanish Americans. New York: Academic Press.

Jencks, Christopher, et al. 1972. Inequality. New York: Basic Books.

Jencks, Christopher, and Marsha Brown. 1975. Effects of high schools on their students. Harvard Educational Review, 45, 273-324.

Jensen, Arthur. 1961. Learning abilities of Mexican-American and Anglo-American children. California Journal of Educational Research, 12, no. 4, 147-159.

Jensen, Arthur. 1980. Bias in mental testing. New York: Free Press.

Kaufman, Maurice. 1968. Will instruction in reading Spanish affect ability in reading English? Journal of Reading, 17, 521-527.

Kimball, W. L. 1968. Parent and family influences on academic achievement among Mexican-American students. Ph.D. Diss., Department of Education, UCLA.

Lambert, W. 1975. Culture and language as factors in learning and education. In A. Wolfgang, ed., Education of immigrant students. Toronto: Ontario Institute for Studies in Education.

Laosa, Luis. 1977. Inequality in the classroom: Observational research on teacher-student interactions, Aztlan, 8, 51-68.

Lewis, L. S., and R. Wanner. 1979. Private schooling and the status attainment process. Sociology of Education, 52 (April), 99-112.

Lewis, R., and N. St. John. 1974. Contributions of cross-racial friendship to minority group achievement in segregated classrooms. Sociometry, 37, no. 1, 79-91.

Lopez, David. 1976. The social consequences of Chicano home/school bilingualism. *Social Problems*, *24*, 234-246.

Mare, Robert. 1980. Social background and school continuation decisions. *Journal of the American Statistical Association*, *75*, 295-305.

Meier, Matt, and F. Rivera. 1972. *The Chicanos: A history of Mexican Americans*. New York: Hill and Wang.

Naboa, Abdin. 1980. Hispanics and desegregation: A summary of ASPIRA's study of Hispanic segregation trends in U.S. school districts. *Metas*, *1*, no. 3 (Fall), 1-24.

National Center for Education Statistics. 1980. *The condition of education for Hispanic Americans*. Washington, D.C.: U.S. Government Printing Office.

Nielsen, François. 1980. *Hispanic youth in U.S. schools: A design for analysis*. Report to the National Center for Education Statistics. Mimeo.

Nielsen, François, and Roberto M. Fernandez. 1981. Achievement of Hispanic students in American high schools: Background characteristics and achievement. Report to the National Center for Education Statistics. Mimeo.

Olivas, Michael. 1980. *The dilemma of access: Minorities in two-year colleges*. Washington, D.C.: Howard University Press.

Otto, Luther, and Archibald Haller. 1979. Evidence for a social-psychological view of the status attainment process. *Social Forces*, *57*, 887-914.

Patchen, Martin, G. Hoffman, and W. Brown. 1980. Academic performance of black high school students under different conditions of contact with white peers. *Sociology of Education*, *53* (January), 33-51.

Peal, E., and W. Lambert. 1962. The relation of bilingualism to intelligence. *Psychological Monographs: General and Applied*, *76*, (27, no. 546), 1-23.

Ramirez, Manuel, and Alfredo Castaneda. 1974. *Cultural democracy, bicognitive development, and education*. New York: Academic Press.

Rumberger, R. 1981. Why kids drop out of high school. Paper presented at the meetings of the American Educational Research Association, Los Angeles.

Sewell, William H., Archibald Haller, and Alejandro Portes. 1969. The education and early occupational attainment process. *American Sociological Review*, *34*, 82-92.

Sewell, William H., Archibald Haller, and M. A. Strauss. 1957. Social status and educational and occupational aspiration, *American Sociological Review*, *22*, 67-73.

Sewell, William H., and Robert M. Hauser. 1975. *Education, occupation, and earnings: Achievement in the early career*. New York: Academic Press.

Sewell, William H., and V. P. Shah. 1968. Social class, parental encouragement, and educational aspirations. *American Journal of Sociology*, *73*, 559-572.

Shea, Brent. 1976. Schooling and its antecedents: Substantive and methodological issues in the status attainment process. *Review of Educational Research*, *46*, 463-526.

Skrabanek, R. L. 1970. Language maintenance among Mexican-Americans. *International Journal of Comparative Sociology*, *11*, no. 4 (Dec.), 272-282.

Smith, Tom. 1980. Ethnic measurement and identification. *Ethnicity*, *7*, 78-95.

Spady, W. G. 1976. The impact of school resources on students. In W. H. Sewell, R. M. Hauser, and D. L. Featherman, eds., *Schooling and achievement in American society*. New York: Academic Press.

Stinchcombe, Arthur L. 1964. *Rebellion in a high school*. Chicago: Aldine.

Theil, Henri. 1971. *Principles of econometrics*. New York: John Wiley.

Thornton, Clarence, and Bruce Eckland. 1980. High school contextual effects for black and white students: A research note. *Sociology of Education*, *53* (October), 247-252.

Tienda, Marta. 1982. Sex, ethnicity, and Chicano status attainment. *International Migration Review*, forthcoming.

U.S. Bureau of the Census. 1979. *Persons of Spanish origin in the U.S.: March 1978*. Population Characteristics, Series P-20, No. 339.

U.S. Commission on Civil Rights. 1967. *Racial isolation in the public schools*. 2 vols. Washington, D.C.: U.S. Government Printing Office.

U.S. Commission on Civil Rights. 1978. *Social indicators of equality for minorities and women*. Washington, D.C.: U.S. Government Printing Office.

Vasquez, Jo Ann. 1974. Will bilingual curricula solve the problem of the low achieving Mexican-American students? *Bilingual Review*, *1*, 236-242.

Weinberg, Meyer. 1977a. *A chance to learn*. Cambridge: Cambridge University Press.

Weinberg, Meyer. 1977b. *Minority students: A research appraisal*. Washington, D.C.: U.S. Government Printing Office.

Wilson, Kenneth. 1979. The effects of integration and class on black education attainment. Sociology of Education, 52 (April), 84-98.

Section IV: Family and Work

Fertility and Labor Supply Among Hispanic American Women

Frank D. Bean
Department of Sociology
University of Texas at Austin

Gray Swicegood
Department of Sociology
University of Texas at Austin

Allan G. King
Department of Economics
University of Texas at Austin

The support and assistance of the facilities and personnel of The Population Research Center at the University of Texas at Austin are gratefully acknowledged, as are the comments of Robert Bach, Glen Cain, Robert Kaufman, Solomon Polachek, Stanley Stephenson, Teresa Sullivan, and Marta Tienda. Errors remain the responsibility of the authors.

Fertility and Labor Supply Among Hispanic American Women

It has been recognized for some time that explanations of the association between fertility and female labor force behavior must take into account the possibility that both the nature and strength of the relationship vary with the level of socioeconomic development (Piepmeier and Adkins, 1973; Safilios-Rothschild, 1977; Standing, 1978). Recent studies of the relationship between these two variables in developed societies have focused on the problems of (a) investigating the timing of fertility events in relation to the timing of labor force events (Cramer, 1980; Smith-Lovin and Tickamyer, 1982; Waite, 1981), and (b) disentangling the direction of influence between fertility and labor supply variables, frequently through the use of simultaneous equation procedures (Cain and Dooley, 1976; Fleischer and Rhodes, 1979; Rosenzweig and Wolpin, 1980; Schultz, 1978; Smith-Lovin and Tickamyer, 1978; Waite and Stolzenberg, 1976). It is not certain whether these approaches must be modified in the case of ethnic minorities in developed countries, particularly given the fact that such groups often contain high proportions of immigrants who have emigrated from developing countries (e.g., Sullivan and Pedraza-Bailey, 1979) and given that the structure of employment opportunities often available to recent immigrants and minority workers may be different in a number of respects from that available to natives and majority group members (Bonacich, 1972; Boyd, 1980; Chiswick, 1978; Portes and Bach, 1980; Wilson and Portes, 1980).

This paper focuses on the relationship of fertility to labor supply among groups of Mexican American, Cuban American, and Puerto Rican women.

The concern is with testing a number of specific hypotheses that derive from the general notion that the trade-offs women make between child care and work vary with particular circumstances. We treat fertility explicitly as a determinant of labor supply rather than consider the effects of labor participation and supply on fertility. As noted below, we do this primarily because of the nature of our data. Under different circumstances, these variables may be jointly and simultaneously determined. Further, we argue that because some of the women in the samples under investigation have immigrated to the United States from countries with lower levels of development and, for associated reasons, because they may encounter a structure of employment opportunities different from those available to nonimmigrant and nonminority women, fertility among immigrant women may be less constraining on labor force activity.

IDEAS AND HYPOTHESES

The central notion guiding the research is that the demands of child care and of working are often in conflict, an idea that in the sociological literature has often been termed the "role-incompatibility hypothesis" (Mason and Palan, 1981; Stycos and Weller, 1967) and one that derives from the analysis of the allocation of time in the economics literature (Becker, 1965; Mincer, 1962). Stated briefly, the hypothesis predicts an inverse association between fertility and work when women are placed in situations that require "trade-offs between their participation in productive employment and the number of children they bear" (Mason and Palan, 1981, p. 551). The amount of conflict between working and mothering has typically been thought to vary depending upon (a) the organization of production and (b) the organization of child care. To the extent that the industrial organization of employment removes work from the home, thus contributing to the separation of the functions of the family from other institutions, female employment requires nonmaternal arrangements for child care if both childbearing and work are to occur at the same time. The availability of parental surrogates in the household serves to diminish this incompatibility, and thus to reduce the likelihood of the emergence of a negative association between fertility and female employment. Such alternatives, it is often argued, are more characteristic of the situations of Third World women, and their availability would serve to mitigate conflicts between working and mothering.

Even though it constitutes the point of departure for the present research, the role-incompatibility hypothesis contains a number of deficiencies that require mention. First, the hypothesis is essentially static in nature and thus begs the question of the direction of causality between fertility and labor supply variables—does having more children reduce the paid work of mothers, or vice versa?--and between these two variables and other variables that may jointly affect them. Nonetheless, it is reasonable to hold questions of that nature in abeyance pending further investigation of the conditions that may modify the strength of association between the two variables, particularly in light of the difficulties that beset the estimation of statistical models containing both interactions and jointly endogenous variables.

Another difficulty is that the role-incompatibility hypothesis provides no basis for predicting a positive relationship between fertility and labor force participation (Mason and Palan, 1981)--i.e., that the more children a woman has, the more she may be gainfully employed.

Since positive associations have been reported in the literature (Goldstein, 1972; Weller, Bertrand, and Harter, 1979), the most satisfactory theory would be one that accounts for the full range of observed variation in strength of association. The kinds of considerations invoked in the role-incompatibility hypothesis, however, speak more to the circumstances under which a negative relationship might not be found. Because a positive relationship appears to have been observed most typically among rural women in developing societies (Mason and Palan, 1981), a circumstance that is not particularly characteristic of the women under investigation here, the present research will confine its attention to the investigation of factors that might be expected to mitigate the strength of a negative relationship between fertility and labor supply.

We examine three categories of variables that might be expected to modify the relationship of fertility and work. These include household composition variables, which we take to indicate variation in the domestic organization of child care, and socioeconomic and ethnicity variables, which we take as indicators of access to the organization of production. In the case of the socioeconomic and ethnicity variables, we assume that certain characteristics of Hispanic women are associated with a relative lack of access to certain part of the occupational opportunity structure, and that this affects the nature of the trade-offs such women make between fertility and work.

Household Composition

The organization of the household to provide child care substitutes is clearly a factor that might be expected to diminish the incompatibility between maternity and work, and thus lessen the strength of the relationship between fertility and work. This factor has usually been measured indirectly (using rural versus urban residence, for example), and one recent study that more directly examined household organization variables generated conflicting findings (Mason and Palan, 1981). Nonetheless, variables that directly or indirectly measure the household organization of child care bear further scrutiny at the individual level, particularly in light of recent findings that the availability of child care outside the household weakens the constraint of fertility on employment (Stolzenberg and Waite, 1981). In general, we would expect that the availability in the household of other persons who might take care of the children will weaken the inhibiting influence of fertility on labor supply.

Socioeconomic Variables

Women in certain types of occupations, or women with characteristics that qualify (or disqualify) them for certain types of work, may be hypothesized to experience greater conflict in maternal versus work roles. For example, women in higher status jobs and/or women in the more "central" as opposed to "peripheral" sectors of the economy, where work discontinuities might be more likely to have adverse earnings and promotion consequences, ought to be more likely to experience greater role incompatibility and thus more likely to exhibit a negative relationship between fertility and work. For example, King (1978) has shown that in a market that offers a range of choices between work and leisure, women with young children are more likely to work. Because an examination of the characteristics of jobs is beyond the scope of the present paper, we focus on wife's education, the relative lack of which in many instances may serve as disqualification for entry into jobs where work continuity is important (Polachek, 1975). Women with lower levels of education are thus assumed to be more likely to hold jobs in the more peripheral sectors of the economy. Because entry and exit from such jobs is less likely to have negative earnings consequences, such women are hypothesized to be less likely to exhibit a negative relationship of fertility to work.

A similar pattern is predicted in the case of husband's income, although for somewhat different reasons. Women whose husbands have low earnings may be expected to have a greater need to contribute to family income, regardless of level of childbearing (Randall, 1977). In fact, other things being equal, greater childbearing might even be associated among these women with a greater need to work. In short, we hypothesize that as husband's income decreases, "role incompatibility" becomes less and less relevant to decisions about whether and how much to work. Hence, fertility is less likely to constrain labor force participation among women whose husbands have low income, holding constant the market opportunities of the wife.

Ethnicity Variables

Two variables—nativity and degree of English proficiency—are also hypothesized to modify the relationship between fertility and work. As in the case of female education, lack of knowledge of English and not being born in the United States are more likely to be associated with limited access to jobs that entail greater role incompatibility of maternity and employment. Some immigrant women may even hold jobs that can be performed in the home or in the neighborhood or from which absences are more likely to be tolerated. In addition, some of the immigrant women may be temporarily residing in the United States, either legally or illegally, and the market opportunities they face are likely to be perceived as far more temporary (and, perhaps, markedly superior) than those prevailing in their countries of origin. The presence of children may be less inhibiting to labor force participation under these temporary conditions than is typical for more permanent residents of these ethnic groups. Hence, a less negative association of fertility and work is predicted among women not born in the United States and among women with lesser knowledge of English.

Group Differences

As will be noted below, the number of Puerto Rican and Cuban women in the age range to which the analyses are restricted is relatively small. Nonetheless, the above hypotheses are examined separately for Mexican Americans, Puerto Ricans, and Cubans. No *a priori* hypotheses are offered about expected patterns of difference among the groups, although it seems reasonable to think that various community structure variables, such as the concentration of Cuban Americans in ethnic enclaves (Wilson and Portes, 1980; Sullivan and Pedraza-Bailey, 1979), may modify the manner in which certain variables mitigate the childbearing constraint on work. For example, it is thought that knowledge of English is not as critical a factor for finding a good job in the ethnic enclave as it is elswhere (Sullivan and Pedraza-Bailey, 1979). Hence, the predicted effects of this variable may not emerge in the case of Cuban women. In addition, the migration of Cubans to the United States is likely to be far more permanent than for the other groups of Hispanics; and the effects of temporary residence may therefore not show up among them.

DATA AND METHODOLOGY

The analyses are based on data from the 1976 Survey of Income and Education (SIE), which was based on a stratified, multistage cluster sample of approximately 151,200 households in the United States. Additional information on the sampling design is available through the technical documentation of the SIE (U.S. Bureau of the Census, 1977). The data are especially valuable for present purposes because the 1976 SIE is the only intercensal national survey of sufficient size to provide samples of Mexican Americans, Puerto Ricans, and Cubans large enough for statistical analysis (even though this is arguable in the case of Cuban American women). Ethnic group membership in this research is defined from the point of view of women; hence these three ethnic groups are delineated on the basis of responses from women to a self-report ethnicity question. This question provides the only means available in the SIE for classifying women of Spanish origin or heritage into more refined ethnic categories.

The samples are restricted to currently married women aged 20 to 34. This delimitation makes it possible to examine the potential mediating role of husband's income in the relationship of fertility to labor supply. It also takes into account the fact that never married, separated, divorced, and widowed women face a different set of options than do their married counterparts when deciding how their fertility will influence their labor force behavior, including the amount of time they work. The age restrictions placed on the sample are intended to maximize the accuracy of the fertility measures.

Measures of Fertility

The SIE does not contain information directly pertaining to fertility behavior. Data on the ages of household members and on family relationships among household members make it possible, however, to allocate children to mother(s) within the household. These data permit the derivation of measures of current and cumulative fertility that are analogous to "own-children" estimates (defined below) of fertility rates (Grabill and Cho, 1965; Retherford and Cho, 1978; Rindfuss and Sweet, 1977). In this research, analyses are conducted including measures of both cumulative and current fertility. The number of children under age 15 is used as a measure of cumulative fertility, and the number of children under age 3 is employed as a measure of current fertility.

Similar assumptions to those involved in calculating own-children annual rates apply to these measures. As enumerated by Rindfuss and Sweet (1977, p. 11), four implicit assumptions underlie the calculation of fertility rates based on survey data: (1) that ages of children and women are correctly reported; (2) that all children reside with their mothers; (3) that mortality is negligible for women and children; and (4) that all women and children are covered by the census. The extent to which these assumptions differentially apply to Hispanic groups as compared to other whites has been addressed in depth elsewhere (Bean and Swicegood, 1982; Bean, Swicegood, and Linsley, 1980). Space does not permit a repetition of that discussion here. Suffice it to say that, after a careful examination of the extent to which the assumptions are met for these groups, particularly for Mexican Americans, it was concluded that own-children procedures generate fertility measures that can be satisfactorily used for studying the determinants and consequences of between- and within-group fertility differentials when they are restricted to women aged 20 to 34. The restriction does not severely limit the scope of the present analyses, since this age range includes that portion of the life cycle where fertility is highest and where potential role incompatibility might be expected to be greatest.

Measurement of Labor Supply and Other Variables

The analyses are based on the respondent's labor force status during the reference week of the survey and the number of weeks worked by the respondent in 1975 as measures of labor supply, although results are presented only for the latter variable. The pattern of associations involving the participation measure tended to be similar to that involving the number of weeks worked, but the results were less likely to be statistically significant. Measures of the amount of time worked in a given year may vary more strongly with fertility than does a dichotomous participation measure (employed versus not employed), since the amount of time worked allows for the possibility of gradations of incompatibility, whereas employed/unemployed does not.

Other variables included in the analyses are measures of ethnicity, of household composition, and of socioeconomic status. Also, controls are included for size of place of residence and wife's age and, in the analyses focusing on the effects of current fertility, for the number of children in the household aged 4 to 14. The two ethnicity variables are nativity—whether foreign or U.S. born—and English proficiency. English proficiency is measured on a six-point scale ranging from "speaks English fluently" to "speaks no English." Two household composition measures are included--household complexity and number of children aged 12 and over. Complexity is determined by the number of families in the household, including subfamilies, plus the number of nonrelated adults residing in the household. Children aged 12 and over refers to all children in the household. The socioeconomic variables include husband's income and wife's education. The former is the total reported income of the husband in thousands of dollars in 1975; the latter is the number of years of schooling of the wife. Of the control variables, size of place of residence is measured by the rank size of the SMSA of residence across the 99 largest SMSAs; women not living in one of these SMSAs receive the maximum rank score of 100. The inclusion of this variable provides a crude control for fertility and labor supply differences across places of varying size (see, e.g., Cooney, 1978). Of the other control variables, wife's age is measured in years, and children aged 4 to 14 is simply the number of children within this age range in the household.

Plan of Analysis

Ordinary least squares regression analysis is employed to obtain estimates of relationships between the fertility measures and number of weeks worked. Because the latter variable includes zero values for women who are not participants in the labor force, we checked for bias in our estimates by also computing the analyses only for participating women. Very similar patterns of results emerged for the samples of participating women as compared to the total samples of women.

We treat fertility as an independent variable and labor supply as a dependent variable. We do this in part because of a primary interest in labor supply rather than fertility. More important, however, in the case of the cross-sectional SIE data, number of weeks worked is measured for the previous year, whereas the current and cumulative fertility variables represent the experience of the previous three and fifteen years respectively.

The basic statistical model is of the following type:

$$(1)\quad LS = \beta_0 + \beta_1 F + \beta_2 I + \beta_3 (F \cdot I) + \sum_{i=1}^{k} \gamma_i X_i + \varepsilon,$$

where LS is a measure of labor supply, F is a measure of fertility, I is a measure (or proxy for) role incompatibility or some other condition thought to modify the relationship between fertility and work, F · I is the interaction between fertility and role incompatibility (or other condition), the X_i are control variables, and ε is a stochastic disturbance term. Our basic expectation is that $\hat{\beta}_3$ will be significantly different from zero, its sign being determined by the particular variable interacting with fertility. In general, we expect fertility to be less of a constraint on the number of weeks worked the less is the "role incompatibility" indicated by the variable.

We estimate the OLS regression models for the three Hispanic groups separately. Not only do Mexican American, Puerto Rican, and Cuban American women exhibit considerably different levels of fertility and patterns of labor force behavior, but they also tend to reside in totally different parts of the country. While separate estimates of patterns of relationship could be derived from a single regression estimate based upon pooled samples, this approach seems unwarranted given the heterogeneity of the groups. Hence, separate estimates based upon separate equations are presented.[1]

EMPIRICAL RESULTS

Descriptive statistics for the variables included in the regression models are presented in Table 1. The descriptive data contain few surprises and duplicate for the most part the picture of differences among these three groups that has emerged from previous research. Mexican American and Puerto Rican women exhibit lower totals for number of weeks worked than do Cuban American women, and Puerto Rican women show a slightly higher value than Mexican American women, a pattern that is just the opposite of that which appears when participation rates are examined (see, e.g., Tienda, 1981). Mexican American women reveal the highest levels of both current and cumulative fertility, followed by Puerto Rican and Cuban American women. A substantially higher proportion of the Mexican American women were born in the United States than is the case for the other two groups (almost all of the Cuban Americans were born in Cuba), and perhaps for this reason the Mexican Americans show a slightly higher average level of English proficiency. Very few of the households in any of the groups contain additional families or nonrelative adults, and the Cuban American households are more likely than the Mexican American and Puerto Rican women to contain a greater number of children aged 12 and over. Not unexpectedly, the Mexican Americans are characterized by the lowest levels of education and income and the Cuban Americans by the highest; the Puerto Ricans in between, although much

Table 1

Means and Standard Deviations of Variables Included in Regression Analyses of Currently Married Hispanic Women, Aged 20-34

Variables	Mexican Americans		Puerto Ricans		Cuban Americans	
	Mean	SD	Mean	SD	Mean	SD
Labor Supply						
Weeks Worked	18.03	21.48	19.28	22.92	27.03	23.81
Fertility Variables						
Children < Age 15	1.98	1.46	1.77	1.28	1.55	1.27
Children < Age 3	.51	.65	.40	.56	.27	.52
Ethnicity Variables						
Nativity (foreign-born)	.30	.46	.78	.42	.95	.22
English Proficiency	4.60	1.44	4.29	1.39	4.33	1.05
Household Structure Variables						
Household Complexity	1.05	.24	1.02	.14	1.03	.17
Children > Age 12	.28	.75	.26	.66	.46	1.05
Socioeconomic Variables						
Husband's Income	8.86	5.62	8.96	5.94	12.66	9.66
Wife's Education	10.23	3.30	10.69	3.12	11.72	2.85
Additional Control Variables						
Rank Size of SMSA	57.61	0.70	20.30	32.54	28.90	5.33
Wife's Age	26.89	4.15	27.29	4.31	28.29	4.32
Children Aged 4 to 14	1.47	1.42	1.37	1.33	1.28	1.25
(N)	(845)		(152)		(53)	

Note: Data base is the 1976 Survey of Income and Education. See text for description of the variables.

closer to the Mexican American levels. The data also reveal a tendency for the Puerto Rican and Cuban American women to be concentrated in larger SMSAs and for the Cuban American women to be somewhat older on average than women in the other two groups.

Before examining the results of the regression models including interaction terms, we first look at the additive models containing the socioeconomic status and control variables (which are included in all models) and each of the ethnicity and household composition variables in turn (Tables 2 through 4). Separate sets of regressions are presented for cumulative and recent fertility to ascertain whether the presence of young children has a stronger inhibiting effect on female labor supply than does cumulative fertility. In the case of the regressions involving recent fertility, the number of children aged 4 to 14 is included as a control in order to make sure that any negative relationships between fertility and work do not simply reflect the tendency for women who have already completed their childbearing to work more.

All three groups reveal the expected negative relationship between fertility and female labor supply; the relationship involving cumulative fertility is slightly weaker in the case of Mexican American women than in the cases of Puerto Rican and Cuban American women. Also, when recent fertility as opposed to cumulative fertility is examined, the relationship is considerably stronger, especially among Cuban American women. Hence, these results are consistent with the ideas that (a) fertility constrains labor supply among Hispanic married women, and (b) recent fertility has a greater inhibiting influence on labor supply than cumulative fertility, a result that we interpret as owing to the greater child care demands required for younger children.

Table 2

Additive Regression Models for Weeks Worked on Fertility and Alternative Independent Variables: Mexican Americans (Unstandardized Coefficients)

Independent Variables	Models (1)	(2)	(3)	(4)	(5)
	A. Cumulative Fertility				
1. Children < 15	-3.925*	-3.919*	-3.931*	-4.189*	-4.023*
2. Husband's Income	-.494*	-.493*	-.565*	-.474*	-.540*
3. Wife's Education	1.042*	1.056*	.416**	1.065*	1.019*
4. Wife's Age	.827*	.825*	.882*	.664*	.761*
5. Rank SMSA Size	.055*	.055*	.043*	.051*	.051*
6. Nativity	—	.207	—	—	—
7. English Proficiency	—	—	2.560*	—	—
8. Children > 12	—	—	—	2.553	—
9. Household Complexity	—	—	—	—	-11.384*
Constant	-5.893	-6.070	-11.340	-1.894	8.652
R^2	.122	.122	.140	.128	.137
	B. Recent Fertility				
1. Children < 3	-9.326*	-9.355*	-8.829*	-8.650*	-9.318*
2. Children 4-14	-2.664*	-2.618*	-2.787*	—	-2.783*
3. Husband's Income	-.480*	-.477*	-.540*	-.487*	-.524*
4. Wife's Education	1.016*	1.092*	.508	1.255*	.994*
5. Wife's Age	.452*	.434*	.532*	-.005	.395*
6. Rank SMSA Size	.048*	-.051*	.039*	.047*	.049*
7. Nativity	—	1.165	—	—	—
8. English Proficiency	—	—	2.086*	—	—
9. Children > 12	—	—	—	.123	—
10. Household Complexity	—	—	—	—	-10.896*
Constant	-5.620	4.751	.061	-.730	19.323
R^2	.155	.155	.167	.134	.168

*Statistically significant at the 5% level.

**Statistically significant at the 1% level.

Dash indicates deleted from regression.

Table 3

Additive Regression Models for Weeks Worked on Fertility and Alternative Independent Variables: Puerto Ricans (Unstandardized Coefficients)

Independent Variables	Models				
	(1)	(2)	(3)	(4)	(5)
	A. Cumulative Fertility				
1. Children < 15	-5.030**	-5.213**	-5.066**	-6.287**	-4.814**
2. Husband's Income	.005	.034	.001	.022	.051
3. Wife's Education	1.246**	1.327**	1.183**	1.038**	1.225**
4. Wife's Age	1.659**	1.595**	1.658**	1.328**	1.591**
5. Rank SMSA Size	-.051	-.044	-.050	-.030	-.054
6. Nativity	—	5.413	—	—	—
7. English Proficiency	—	—	.260	—	—
8. Children > 12	—	—	—	7.434**	—
9. Household Complexity	—	—	—	—	11.670
Constant	-29.415	-32.794	-29.742	-18.409	-39.970
R^2	.128	.137	.128	.162	.133
	B. Recent Fertility				
1. Children < 3	-11.823**	-11.866**	-12.152**	-10.669**	-11.582**
2. Children 4-14	-3.580**	-3.779**	-3.378**	—	-3.377**
3. Husband's Income	.092	.118	.109	.047	.137
4. Wife's Education	1.092**	1.170**	1.272**	1.244**	1.072**
5. Wife's Age	1.055**	1.007**	1.018**	.190	.991**
6. Rank SMSA Size	-.069	-.063	-.072*	-.080*	.072*
7. Nativity	—	5.054	—	—	—
8. English Proficiency	—	—	.783	—	—
9. Children > 12	—	—	—	3.734	—
10. Household Complexity	—	—	—	—	11.346
Constant	-10.952	-14.455	-8.776	5.280	-21.298
R^2	.158	.166	.160	.144	.138

*Statistically significant at the 10% level.
**Statistically significant at the 5% level.
Dash indicates deleted from regression.

Table 4

Additive Regression Models for Weeks Worked on Fertility and Alternative Independent Variables: Cuban Americans (Unstandardized Coefficients).

	Models				
Independent Variables	(1)	(2)	(3)	(4)	(5)
	A. Cumulative Fertility				
1. Children < 15	-5.203**	-5.002**	-6.032**	-5.171**	-4.850**
2. Husband's Income	.476*	.482*	.312	.474*	.541*
3. Wife's Education	.111	.017	-.710	.099	.079
4. Wife's Age	.274	.253	.894	.278	.310
5. Rank SMSA Size	.220*	.218*	.217*	.220**	.227**
6. Nativity	—	-4.284	—	—	—
7. English Proficiency	—	—	5.428*	—	—
8. Children > 12	—	—	—	-.119	—
9. Household Complexity	—	—	—	—	15.023
Constant	13.666	19.054	-14.292	13.715	-4.046
	.156	.157	.187	.156	.166
	B. Recent Fertility				
1. Children < 3	-17.535**	-17.477**	-18.382**	-17.511**	-17.133**
2. Children 4-14	-2.657	-2.632	-3.486	—	2.332
3. Husband's Income	.627**	.628**	.463*	.620**	.689**
4. Wife's Education	.574	.559	-.249	.378	.542
5. Wife's Age	-.126	-.128	.496	-.317	-.089
6. Rank SMSA S	.163*	.162*	.160*	.155*	.170*
7. Nativity	—	-.653	—	—	—
8. English Proficiency	—	—	5.445*	—	—
9. Children > 12	—	—	—	-3.327	—
10. Household Complexity	—	—	—	—	14.373
Constant	19.353	20.163	-8.688	25.501	2.378
R^2	.239	.239	.270	.243	.248

*Statistically significant at the 10% level.
**Statistically significant at the 5% level.
Dash indicates deleted from regression.

Turning to other variables, we find that husband's income exhibits quite different relationships: whether it positively or negatively affects the number of weeks worked depends upon the particular Hispanic-origin group being examined. This reinforces the idea that heterogeneity among these groups requires their separate analysis. Among Mexican American women, we observe the frequently noted pattern of a lower likelihood for wives to work the higher the husband's income. No statistically significant relationship occurs among Puerto Rican women, while among Cuban American women higher husband's income is associated with a greater tendency for wives to work, other things being equal. We return below to an interpretation of this pattern of intergroup differences.

Wife's education tends to be positive and significantly related to number of weeks worked among Mexican American and Puerto Rican women, but it shows no significant relationship among Cuban American women. In the cases of the first two groups, this finding is consistent with the notion that female labor supply varies positively with the female wage rate, if we assume that, among these women, higher education is associated with higher wage rates and greater opportunity costs connected with staying home.[2] Wife's age exhibits a similar pattern of relationship. The coefficients are positive and significant among Mexican Americans and Puerto Ricans but inconsistent and insignificant among Cuban Americans. The positive relationships may be interpreted as indicating that labor supply increases with the termination of childbearing and as children grow older, thus easing the demands of child care (Waite, 1980).

Finally, it is of some interest to note that among Mexican American and Cuban American (but not Puerto Rican) women, living in a larger SMSA is associated with fewer weeks worked. In addition to the possibility that increasing SMSA size may be associated with greater costs of working, thus tending to dampen female labor supply, this finding may be related to two types of seasonality. The Cuban women are largely concentrated in Miami, whose economy has a substantial seasonal component. Both Cuban and Mexican American women may find that larger cities offer them the opportunity to take jobs during the school year but to stay at home during the summer. Smaller cities, with less job differentiation, do not offer the same opportunities. In addition, many of the larger SMSAs with Mexican American concentrations may have some seasonal component of jobs often performed by women (e.g., food processing in California and Texas). This does not explain the finding among Puerto Rican women. Perhaps Puerto Rican women, like black women, may be developing "insurance" against the eventual loss of financial support from a husband. The percentage of households headed by women is nearly as large among Puerto Ricans as among blacks.

Focusing next on nativity and English proficiency, we find that having been born outside the United States bears no significant relationship to the number of weeks worked, once other variables are controlled. English language proficiency, however, is significantly and positively related to working among Mexican and Cuban, but not Puerto Rican, women. The relationship is about twice as strong among Cuban women, perhaps because of the greater range of occupational opportunities available to them (Sullivan and Pedraza-Bailey, 1979).

Of the household composition variables, no significant relationships emerge between number of weeks worked and the number of children in the household aged 12 and over, although the relationships are positive in the cases of Mexican American and Puerto Rican women. The measure of household complexity reveals quite large coefficients (although not all in the same direction) in all cases. However, the number of observations on which these are based is very small, particularly in the cases of Puerto Rican and Cuban American women, thus contributing to their high standard errors. Among Mexican Americans, the group in which the largest number of complex families occurs, the coefficient is negative, indicating that a greater number of families and secondary adults sharing the same household is in and of itself associated with fewer weeks worked.

Turning to the question of whether fertility is less constraining on number of weeks worked under varying conditions, we present in Tables 5-7 tests for the hypothesized interaction effects, separately for measures of cumulative and current fertility and separately for the different groups. Table 5 shows first the relationships involving interactions between fertility and husband's income and fertility and wife's education. Among Mexican Americans, the coefficients for the interaction terms in the regression equations exhibit the expected negative sign and are significant in the case of the equations involving cumulative fertility. Taking partial derivatives and following the procedures for interpreting the results of these kinds of models suggested by Stolzenberg (1980), we find that the relationship between fertility and number of weeks worked becomes more negative with both rising husband's income and increasing wife's education. Among Puerto Ricans, cumulative fertility also increasingly inhibits the amount of time worked the greater is the wife's education. Hence, in the case of cumulative fertility among Mexican American and Puerto Rican women, three of the four tests give results consistent with the idea that fertility is less constraining on labor supply at low levels of socioeconomic status.

Table 5

Partial Metric Regression Slopes Relating the Interaction of Fertility and Socioeconomic Variables to Labor Supply[a]

Independent Variables	Mexican Americans (1)	Mexican Americans (2)	Puerto Ricans (1)	Puerto Ricans (2)	Cuban Americans (1)	Cuban Americans (2)
			A. Cumulative Fertility			
1. Children < 15	-1.734**	2.412**	-6.579**	5.854*	-15.400**	-5.385**
2. Husband's Income	.047	-.453**	-.314	.093	-.757*	.476*
3. Wife's Education	1.041**	2.319**	1.180**	3.352**	.130	.081
4. Interaction (1×2)	-.290**	—	.186	—	.935**	—
5. Interaction (1×3)	—	-.703**	—	-1.052**	—	.016
Constant	-10.574	-21.560	-26.244	-55.138	11.563	14.069
R^2	.129	.150	.131	.167	.257	.156
			B. Recent Fertility			
1. Children < 3	-8.491*	-7.646*	-20.622*	-1.534	-20.728*	-58.766**
2. Husband's Income	-.437*	-.480*	-.062	.066	.437	.678*
3. Wife's Education	1.017	1.107*	1.004	1.648*	.794	.124
4. Interaction (1×2)	-.101	—	.908	—	.278	—
5. Interaction (1×3)	—	-.173	—	-.974	—	3.268
Constant	5.356	4.770	-9.383	-15.732	19.350	30.100
R^2	.155	.155	.167	.165	.241	.252

*Statistically significant at the 10% level.

**Statistically significant at the 5% level.

Dash indicates deleted from the regression model.

[a] Effects estimated net of wife's age, rank size of SMSA and (in the case of models including recent fertility) number of children aged 4 to 14.

Table 6

Partial Metric Regression Slopes Relating the Interaction of Fertility and Ethnicity Variables to Labor Supply[a]

Independent Variables	Mexican Americans (1)	Mexican Americans (2)	Puerto Ricans (1)	Puerto Ricans (2)	Cuban Americans (1)	Cuban Americans (2)
			A. Cumulative Fertility			
1. Children < 15	-5.070**	-.452	-9.274**	1.191	--	-23.269**
2. Nativity	-6.267**	--	-1.723	--	--	--
3. English Proficiency	--	4.476**	--	2.299	--	-.532
4. Interaction (1×2)	3.115**	--	4.965*	--	--	--
5. Interaction (1×3)	--	-.861**	--	-1.458*	--	4.024**
Constant	-5.017	5.115	-29.510	-42.250	--	18.013
R^2	.312	.149	.148	.139	--	.224
			B. Recent Fertility			
1. Children < 3	-10.504**	-.848	-17.055**	-8.466	--	-41.263
2. Nativity	-5.304**	--	-3.294	--	--	--
3. English Proficiency	--	3.427**	--	-.322	--	4.569
4. Interaction (1×2)	3.113**	--	5.791**	--	--	--
5. Interaction (1×3)	--	-1.901**	--	-.887	--	4.874
Constant	5.801	-4.998	-9.372	-12.254	--	-10.363
R^2	.165	.175	.181	.161	--	.275

*Statistically significant at the 10% level.
**Statistically significant at the 5% level.
Dash indicates deleted from the regression model.
[a] Effects estimated net of wife's age, rank size of SMSA, and (in the case of models including recent fertility) number of children aged 4 to 14.

Table 7

Partial Metric Regression Slopes Relating the Interaction of Fertility and Household Composition Variables to Labor Supply[a]

Independent Variables	Mexican Americans (1)	Mexican Americans (2)	Puerto Ricans (1)	Puerto Ricans (2)	Cuban Americans (1)	Cuban Americans (2)
			A. Cumulative Fertility			
1. Children < 15	-8.122**	-5.066**	--	-6.351**	--	-3.621
2. Household Complexity	-16.283**	--	--	--	--	--
3. Children > 12	--	-3.218**	--	6.496	--	16.796*
4. Interaction (1×2)	3.869**	--	--	--	--	--
5. Interaction (1×3)	--	1.887**	--	.294	--	-4.579*
Constant	13.271	-1.310	--	-18.568	--	17.896
R^2	.140	.139	--	.162	--	.187
			B. Recent Fertility			
1. Children < 3	-16.309**	-8.592**	--	-11.725**	--	-16.559**
2. Household Complexity	-14.815**	--	--	--	--	--
3. Children > 12	--	.207	--	2.823	--	-3.279
4. Interaction (1×2)	6.591*	--	--	--	--	--
5. Interaction (1×3)	--	-.372	--	8.285	--	-13.876
Constant	23.411	11.212	--	9.164	--	25.623
R^2	.171	.134	--	.151	--	.249

*Statistically significant at the 10% level.
**Statistically significant at the 5% level.
Dash indicates deleted from the regression model.
[a] Effects estimated net of wife's age, rank size of SMSA and (in the case of models including recent fertility) number of children aged 4 to 14.

By contrast, Cuban American women reveal interaction effects that are in the opposite direction, although only one of the four tests shows a result that attains statistical significance. From the magnitude of the coefficients in the equation including the interaction of income and cumulative fertility, we can see that the relationship of fertility to work is most negative for Cuban American women whose husbands have lower incomes, and that the relationship becomes increasingly less negative as income rises. Although this result is based on a small number of cases, having larger families is apparently less likely to deter Cuban American women from working if their husbands have higher incomes.

Turning to the models that include the ethnicity variables (Table 6), we note that among Mexican American and Puerto Rican women, seven of the eight tests for interaction effects are statistically significant in the predicted direction. Having been born in Mexico and being less proficient in English are both associated with a reduction in the constraining influence of both cumulative and recent fertility on number of weeks worked. Among Cuban Americans, the opposite pattern occurs once again. Although the number of women in this group that were born in the United States is too small to allow a reliable assessment of the interaction of nativity and fertility, the test based on degree of English proficiency reveals that while family size sharply constrains working among women with poor English proficiency, it is less and less likely to affect the amount of time worked as English proficiency improves.

The measures of household composition also yield significant results in the predicted direction, but only among Mexican Americans (Table 7). Among Puerto Ricans and Cuban Americans, the number of women living in "complex" family situations is too small to allow reliable assessment of interaction effects involving this variable. The results for Mexican American women, however, show that the presence of other persons in the household, either other adults or older children, mitigates the inhibiting influence of fertility on working. For Cuban American women, the opposite pattern emerges yet again in the case of the tests for interactions involving number of older children. The presence of older children in the household, who presumably might provide substitute child care, increases the likelihood among these women of fertility having a negative effect on working.

SUMMARY AND CONCLUSIONS

This paper has considered the effects of fertility on the labor supply of three groups of Hispanic women in the United States. Drawing on the notion of "role incompatibility"—the degree to which the joint provision of child care and work are in conflict—we addressed the question of whether having characteristics that increase the likelihood of participation in the secondary-type of labor market mitigates the effects of fertility on labor supply. The nature of the labor markets to which these women might have access was indexed by the women's English proficiency, generational status, and educational and husband's income levels. The role-incompatibility hypothesis directs our attention to the interaction of these variables with the various measures of fertility. In addition, we considered the effects of household composition variables which record the presence of older children and nonparental adults in the household as a factor which lessens the constraint of fertility on female labor supply.

Our results indicate that these variables are significant in their interactions with fertility, particularly among Mexican Americans, although the signs of the effects are not always in the expected direction among Cuban Americans. The Mexican Americans seem to conform rather closely in their behavior to what we have hypothesized. Cuban Americans seem to be less deterred from working by the presence of children in proportion to higher socioeconomic status and greater English proficiency.

In general, then, the pattern of the results is consistent with the predictions derived from the role-incompatibility hypothesis. However, an alternative explanation might also be invoked to explain the findings. The more constraining influence of fertility on labor supply among Mexican American and Puerto Rican women who have higher socioeconomic status, are U.S.-born, and speak English more proficiently might be interpreted as reflecting a greater desire for chidren of "higher" quality (de Tray, 1974; Standing, 1978, p. 169) rather than as reflecting greater access to the kinds of labor markets for which the opportunity costs of inactivity are highest. While it might be argued that women with higher education may be more likely to devote time to the informal socialization and education of young children in order to achieve higher qualities in a child, it is not so readily apparent why this should hold for English-speaking but not Spanish-speaking women. Perhaps more to the point, the fact that among Mexican American women (and to a lesser extent among Puerto Rican women) the predicted interaction effects for the ethnicity but not the socioeconomic status variables emerge in the regressions involving recent fertility (which might be argued to be especially likely to pick up quality effects) suggests that desires for greater child quality probably do not underlie the observed results.

The anomalous results for the Cuban American women are based on such a small number of cases that not too much significance should be given to them. Nonetheless, there are some features of the Cuban experience that would seem likely to render distinctive the ways in which fertility affects labor supply in this group. These derive primarily from the fact that the Cuban population is concentrated in an "ethnic enclave" in Miami. Associated with this are a greater likelihood of self-employment and greater opportunities to employ domestic servants, frequently from among recent immigrants (Portes, 1981; Portes, 1982). The less constraining influence of fertility on labor supply that occurs with rising socioeconomic status among Cuban American women may simply reflect the increasing likelihood of the possession of the resources required to take advantage of opportunities to provide alternative possibilities for child care. Further research among Cuban Americans based on larger samples than the ones available here may help to shed further light on these questions.

Finally, we concede that problems exist in specifying entirely satisfactory measures of fertility and labor supply. We find substantial agreement in the results obtained across the various measures employed, as well as support for the notion that Hispanic women are heterogeneous in their patterns of labor supply. Yet the need for refinements is obvious. Methodologically, it would be desirable to consider simultaneously the participation and weeks-of-work decisions, perhaps in the fashion proposed by Heckman (1976). In addition, it would be desirable if our conjectures regarding the nature of work and its complementarity with child care could be evaluated more directly. This seems possible, to a degree, by utilizing the sample of working women and noting the nature of the jobs they hold and their hours of work. If those with English-language deficiencies are concentrated in poorer jobs which may permit more flexible child care arrangements, then relationships among language proficiency, job characteristics, and hours of work should be apparent in the data.

Notes

[1] Because disagreement exists concerning the question of whether to base estimates of statistical relationships among variables on weighted or unweighted samples, we have run our analyses both ways. The results do not differ markedly. In the tables in this paper, results based on weighted statistics are presented.

[2] It should be noted that we do not include a wage variable in the analyses. This is because a majority of the Mexican American women do not work, thus requiring that an attributed wage be calculated for these women. Since we include in the analyses the variables that would be used as predictors in such an equation (e.g., education and English proficiency), we feel that little would be gained by computing attributed wages.

References

Bean, Frank D., and Gray Swicegood. 1982. Generation, female education, and Mexican American fertility. Social Science Quarterly, forthcoming.

Bean, Frank D., Gray Swicegood, and Thomas F. Linsley. 1980. Patterns of fertility variation among Mexican immigrants to the United States. Paper No. 2.016, Texas Population Research Center, University of Texas at Austin.

Becker, Gary S. 1965. A theory of the allocation of time. Economic Journal, 75 (September), 493-517.

Bonacich, E. 1972. A theory of ethnic antagonism: The split labor market. American Sociological Review, 37, 547-559.

Boyd, Monica. 1980. The double negative: Female immigrants in the Canadian labor force. Paper presented at the annual meetings of the Population Association of America, Denver.

Cain, Glen, and Martin D. Dooley. 1976. Estimation of a model of labor supply, fertility and wages of married women. Journal of Political Economy, 84, S179-199.

Chiswick, Barry R. 1978. The effect of Americanization on the earnings of foreign-born men. Journal of Political Economy, 86, 897-921.

Cooney, R. 1978. Intercity variation in Puerto Rican female participation. Journal of Human Resources, 14, 222-235.

Cramer, James C. 1980. Fertility and female employment: Problems of causal direction. American Sociological Review, 45, 167-190.

de Tray, D.N. 1974. Child quality and the demand for children. In Economics of the Family: Marriage, children, and human capital, ed. T.W. Schultz. Chicago: University of Chicago Press.

Fleischer, Belton M., and George F. Rhodes, Jr. 1979. Fertility, women's wage rates, and labor supply. American Economic Review, 69 (March), 14-25.

Goldstein, S. 1972. The influence of labour force participation and education on fertility in Thailand. Population Studies, 26, 419-436.

Grabill, Wilson H., and Lee-Jay Cho. 1965. Methodology for the measurement of current fertility from data on young children. Demography, 2, 50-74.

Heckman, James. 1976. The common structure of statistical models of truncation, sample selection and limited dependent variables and a simple estimator for such models. Annals of Economic and Social Measurement, 5, 475-492.

King, Allan. 1978. Industrial structure, flexibility of working hours, and women's labor force participation. Review of Economics and Statistics, 60, No. 3, 399-407.

Mason, Karen O., and V. T. Palan. 1981. Female employment and fertility in peninsular Malaysia: The maternal role incompatibility hypothesis reconsidered. Demography, 18, 549-575.

Mincer, Jacob. 1962. Labor force participation of married women. In Aspects of labor economics, ed. H.G. Lewis. Princeton, N.J.: Princeton University Press, for the National Bureau of Economic Research.

Piepmeier, K.B., and T.S. Adkins. 1973. The status of women and fertility. Journal of Biosocial Science, 5, 507-520.

Polachek, Solomon. 1975. Discontinuous labor force participation and its effect on women's market earnings. In Sex, discrimination, and the division of labor, ed. C. Lloyd. New York: Columbia University Press.

Portes, A. 1981. Modes of structural incorporation and present theories of labor immigration. In Global trends in migration, ed. M. Kritz, C. Keely, and S. Tomasi. New York: Center for Migration Studies.

Portes, A. 1982. Immigrants' attainment: An analysis of occupation and earnings among Cuban exiles in the United States. In Essays in honor of William Hamilton Sewell. New York: Academic Press.

Portes, A., and R. Bach. 1980. Immigrant earnings: Cuban and Mexican immigrants in the United States. International Migration Review, 14, 315-341.

Randall, N.H. 1977. Women's need for income: Their employment and earnings. Working Paper No. 77-2, Center for Demography and Ecology, University of Wisconsin, Madison.

Retherford, Robert D., and Lee-Jay Cho. 1978. Age-parity-specific birth rates and birth probabilities from census or survey data on own children. Population Studies, 32, 567-581.

Rindfuss, Ronald R., and James A. Sweet. 1977. Post-war fertility trends and differentials in the United States. New York: Academic Press.

Rosenzweig, Mark R., and Kenneth I. Wolpin. 1980. Life-cycle labor supply and fertility: Causal inferences from household models. Journal of Political Economy, 88, No. 2, 320.

Safilios-Rothschild, Constantina. 1977. The relationship between women's work and fertility: Some methodological and theoretical issues. In The fertility of working women, ed. S. Kupinsky. New York: Praeger.

Schultz, T.P. 1978. The influence of fertility on labor supply of married women: Simultaneous equation estimates. _Research in Labor Economics_, _2_, 273-351.

Smith-Lovin, Lynn, and Ann R. Tickamyer. 1978. Labor force participation, fertility behavior, and sex role attitudes. _American Sociological Review_, _43_, 541-56.

Smith-Lovin, Lynn, and Ann R. Tickamyer. 1982. Fertility and patterns of labor force participation among married women. _Social Biology_, forthcoming.

Standing, G. 1978. _Labour force participation and development_. Geneva: International Labour Office.

Stolzenberg, Ross M. 1980. The measurement and decomposition of causal effects in non-linear and non-additive models. _Sociological methodology, 1980_, ed. K. Schuessler. San Francisco: Jossey-Bass.

Stolzenberg, Ross M., and Linda J. Waite. 1981. Labor market characteristics and the labor force participation of individuals. Rand Paper Series P-6705, Rand Corporation, Santa Monica, Calif.

Stycos, J.M., and R.H. Weller. 1967. Female working roles and fertility. _Demography_, _4_, 210-217.

Sullivan, T., and S. Pedraza-Bailey. 1979. Differential success among Cuban American and Mexican American immigrants. Final Report, Employment and Training Administration, U.S. Department of Labor.

Tienda, Marta. 1981. Hispanic origin workers in the U.S. labor market: Comparative analyses of employment and earnings. Final Report, Employment and Training Administration, U.S. Department of Labor.

U.S. Bureau of the Census. 1977. _Technical documentation of the 1976 Survey of Income and Education_. Washington, D.C.: USGPO.

Waite, L. 1981. Working wives and the family life cycle. *American Journal of Sociology*, *86*, 272-294.

Waite, Linda J., and Ross M. Stolzenberg. 1976. Intended childbearing and labor force participation of young women: Insights from nonrecursive models. *American Sociological Review*, *41*, 235-251.

Weller, R., W. Bertrand, and C. Harter. 1979. Female employment status and fertility in Cali, Columbia. Paper presented at the annual meetings of the Population Association of America.

Wilson, K., and A. Portes. 1980. Immigrant enclaves: An analysis of the labor market experience of Cubans in Miami. *American Journal of Sociology*, *56*, 293-319.

The Migration of Mexican Indocumentados as a Settlement Process: Implications for Work

Harley L. Browning and Nestor Rodríguez
Population Research Center and Department of Sociology
University of Texas at Austin

Although this paper bears two names it is really a product of a larger group, the members of the Texas Indocumentado Study, who have contributed much to the development of the approach taken here. In particular, we wish to acknowledge the contributions of Rogelio Nuñez, co-director, as well as those of David Benke, Waltraut Feindt, and Harriet Romo. We are also indebted to the discussants at the conference, Solomon Polachek and Robert Bach. The latter, in particular, raised some important points that have stimulated us to reconsider our argument. Our thanks to Humberto Muñoz and Orlandina de Oliveira, who provided timely encouragement and suggestions.

The Migration of Mexican Indocumentados as a Settlement Process: Implications for Work

"Illegal aliens," "mojados," "undocumented workers"--there is not even agreement as to what they should be called.[1] Few features of American life in the last decade or so have generated as much interest and concern as the large-scale movement of Mexican nationals without papers who cross the U.S. border in search of employment. The mass media, especially in the Southwest, regularly run stories on this group, sometimes of an alarmist tone, and on the political level the two most recent presidents of the United States have formulated plans that attempt to deal with this problem.

Even the scholarly community, somewhat tardily, has begun to look closely at this phenomenon.[2] As a result, it is no longer possible, as would have been the case only a few years ago, to state that the ignorance about indocumentados is almost total. Yet our knowledge is still fragmentary and therefore likely to provide a somewhat distorted view of the subject. Most studies of indocumentados have taken one of two quite different approaches: the individual (micro) level or the global, international (macro) level. Characteristically, the individual level is tapped by questionnaires administered to those apprehended in attempting to cross the border or to those contacted in some other manner. The survey approach permits the compilation of population profiles by aggregating the individual responses to a range of questions (sex, age, birthplace, method of crossing, jobs in the United States, use of social services, etc.).[3] At the other extreme are analysts who pose broad questions such as, "What is the impact upon the capitalist systems of Mexico and the U.S.A. of this type of geographical mobility?" This political economy approach takes the individual as given and makes problematic the structures--economic, political--through which that person moves.[4]

Each approach is legitimate, offering perspectives and insights that the other cannot consider. But even when considered together (which is rarely the case),[5] they provide an incomplete understanding of the situation of indocumentados. A full perspective requires consideration of a number of intermediate levels that lie between the individual and the international level. A list of the levels, from macro to micro, might cover the following elements: (1) international, (2) national, (3) regional (especially the Southwest), (4) community, (5) workplace, (6) welfare and leisure institutions, (7) interethnic relationships (especially Chicano-indocumentado), (8) neighborhood (barrio), (9) family or household, (10) individual. No single research project can be expected to devote equal attention to all ten levels, but researchers should be aware of how changes introduced in one level (i.e., the national level through implementation of the Reagan program) would have significant impacts on many of the other levels.

The Texas Indocumentado Study has chosen to concentrate on levels 4 through 9, from the community to the family or household. During several years of field experience, our attention has shifted from the traditional emphasis on the individual--the "classic" depiction of the young, unattached male coming across the border for a limited period of time and then returning to Mexico--to those indocumentados who may be characterized as settlers because their actions are likely to lead to permanent settlement (although they themselves would not necessarily say that this was their intent).

The shift of emphasis from the temporary migrant to those involved in settlement involves changes to broaden the study design. As will be noted, different field techniques have become appropriate and important changes have occurred in the conceptualization and methodology of the investigation. A central alteration is the unit of analysis, which shifted from the individual to the family or household. Family formation is a major consideration and introduces factors that are not present in dealing with individuals. For example, the contributors to household income may include wives and older children. Because of younger children born in the United States, the indocumentado family is much more likely to become involved in a wider range of community institutions, especially health care organizations (hospitals, pediatric care, etc.) and schools.

Illegality, a basic identifying characteristic of these people, takes on a different meaning for families. An unattached male or female, in the country for only a few months, can be rather nonchalant about the prospect of being apprehended by the migra (as the Immigration and Naturalization Service is called), but the situation for families is much more complex and uncertain. The costs of getting back across the border are higher, and there is always the possibility of family separation. (One mother who is employed with her husband full time, outside the home, has a recurrent nightmare that the two of them will be picked up and deported, leaving the children to fend for themselves.) The longer the family remains in the United States the greater is the pressure to acquire legal status, for the lack of it raises problems and obstacles at every turn.

The length of U.S. residence of the family unit also generates new conditions that must be met. The short-term migrant has no ambivalence about his or her status as a Mexican, but for those who have resided for years in the United States the matter of self-identity becomes more ambiguous, and for the children born or brought up in this country, the question of identity—Mexican or Chicano—inevitably produces uncertainties and tensions within the family.

The shift to a focus on the settlement process thus introduces many new aspects and requires a broader research design. In particular, time as an analytical variable becomes more significant. Short-term migrants often do not change the pattern of their activities, even if they engage in repeat migrations. The temporal parameters of the individual life cycle serve to characterize this kind of migration, but when dealing with the family unit the family life cycle must be introduced with its inherently more complex relationships that change over time.

Historical time also is important. The periods when migrants come across must be related to changes in the national economy, especially labor market conditions in the area of destination, as well as developments during the stay of the migrants. These factors must be evaluated in a different way from the experience of short-term migrants.

In confronting the analytically challenging task of assembling data from a variety of sources, ordering them, and then developing a coherent interpretation of the settlement process of indocumentados, we have elaborated a set of three analytic models that have proved, in our judgment, useful in dealing with the complexity of the situation. We must caution that the term "model" in our usage is not a rigorous formulation subject to direct testing. Rather, it is a loose conceptual formulation, helpful in analyzing the data. Each of the three models incorporates time as an explicit dimension and each can be used for a level of analysis other than that of the individual.

At this point we briefly introduce the three models, deferring to a later section their elaboration. The broadest, most inclusive is the Reproduction Model. It addressses the question of how the indocumentados reproduce themselves both demographically and socially. Included is the legal status of the indocumentados. The other two models set forth conditions affecting the social reproduction of this population.

The Resource Accumulation Model explores the manner by which indocumentados, in the process of their incorporation into U.S. society, acquire and utilize resources of four kinds: financial, work, social, and cultural. The third model, Chicano-Indocumentado Separation Model, examines the crucial contacts between members of the host Chicano community and the indocumentados. The two groups have certain similarities and differences; we will use the model to show how structural factors tend to separate them in three contexts—work, associational, and cultural.

This paper briefly describes some features of the Texas Indocumentado project, emphasizing labor participation. Each of the models is then elaborated. In the final section we discuss the implications for the labor process of the conceptual and methodological framework. We pose the question, What analytic leads that will help us understand the work conditions of indocumentados emerge from a consideration of the settlement process, taking the family or household as the unit of analysis? We will discuss the relationship of the household to work participation, the work separation of indocumentados and Chicanos, factors affecting job mobility, and the benefits to employers of employing indocumentado labor.

THE TEXAS INDOCUMENTADO STUDY

Over a period of more than three years, financed by two sources (The Mexico-United States Border Research Program at the University of Texas at Austin, directed by Stanley Ross, and a grant from the population division of the National Institute of Child Health and Human Development (NICHD), the Texas Indocumentado Study has carried out field work in the metropolitan communities of Austin and San Antonio. Both are far enough from the border (150 miles and more) so they do not share the characteristics peculiar to the border zone, but are close enough to be convenient destinations for indocumentados. San Antonio has a 1980 city population of 785,000, 54% of Mexican origin; Austin has a 1980 city population of 345,496, with a Mexican-origin population of 19%.[6] The two communities differ not only in population size, but also in the relative, and of course the absolute, size of the "host" community, the Chicano population. They also differ in their historical development. San Antonio can be characterized as an "old" community of destination for Mexican migrants, legal and illegal, for it is possible to trace the migratory flows back for many decades. Labor recruiters were sent to Mexico in the early decade of the century to contract for workers.[7] In contrast, Austin may be termed a "new" community of destination, with fewer and more recently arrived indocumentados.

Because of these and other factors, Austin and San Antonio differ in what may be termed the "opportunity structures" that confront indocumentado migrants upon their arrival. Each community presents a different industry-occupation mix of employment opportunities. Both have a higher than average number of government service industries, but of different kinds: the military in San Antonio, state government and the university in Austin. Consequently, San Antonio is more a blue collar metropolis and Austin is more a white collar community. None of the government-based industries directly hire many indocumentados, but they do provide substantial employment for Chicanos.

In terms of the respective labor markets, Austin and San Antonio differ in the mix of industry jobs for indocumentados. San Antonio has more opportunities in the garment industry, certain food processors, and wholesaling (it is a major processor and distributor of Mexican food products), and Austin has the mining industry of lime production and the manufacturing industry of cement precasting. Both are strong in construction and in restaurant and hotel employment.

What is striking in both communities is the virtual absence of indocumentado employment in white collar positions and its concentration in the secondary labor market sector, even when indocumentados are employed in primary sectors. The workplaces differ considerably in terms of size, level of technology, and organizational structure, but there is much less variation in terms of secondary labor market characteristics: little job security, much fluctuation in hours worked per week, physically demanding jobs, often of a dirty and sometimes dangerous nature, etc. Congruent with other studies, we find that most indocumentados are paid the minimum wage rate, but the hourly variations due to weather and fluctuations of demand create great and unpredictable variation in income.

Indocumentado workers also must deal with abuse from employer or supervisor. In smaller firms, ability to keep the job sometimes depends upon personal relations with the owner or supervisor (for women, sexual abuse is not uncommon). In the larger and organizationally more complex firms, supervision of indocumentados is in the hands of Chicanos who sometimes are paternalistic and at times abusive.

Women indocumentados, whether unattached or living in unions, often work outside the home. Even women with quite young children work, still an unusual pattern in Mexico. We believe this occurs not only because tight family finances often require the mother's contribution, but also because the social pressures in Mexico put on a mother not to work are much weaker in the United States. Working mothers often must rely upon older children to care for and supervise the younger children. Women work in various personal services (laundries, cafeterias, hotels and motels, as maids, etc.) and in various labor-intensive manufacturing establishments (textile and garment factories, food processing, mattress factory, etc.). Their work is less subject to weekly fluctuations owing to weather variations than is that of men, but seasonal factors and other variations in demand produce considerable fluctuations in income. Although both men and women indocumentados have jobs that offer little in the way of upward job mobility, women's work has even greater dead-end characteristics than that of men.

Indocumentados not only must function as producers, because they either find work or must return to Mexico, but also as consumers. Like every one else, they must find shelter and sustenance. Just as San Antonio and Austin present different employment opportunity structures to incoming migrants, they also differ in their consumption opportunity structures. For reasons related to the absolute and relative size of the Chicano populations of Austin and San Antonio and the historical development of the two communities, San Antonio offers greater consumption opportunities specifically oriented to indocumentados than does Austin. This holds for low-cost housing, retailers catering to "Mexican" tastes, and personal and social services, notably those in the field of health.

Housing is an especially important consideration for families. Unattached male migrants often share a dwelling or a room with other men, thereby reducing housing costs, but a couple with children generally must try to find a single dwelling or an apartment. Even if they take boarders, their costs are higher. Indocumentados are not eligible for public low-cost housing, so they must find something suitable in the private sector. In San Antonio there are landlords who specialize in catering to indocumentado tenants; those tenants are required to pay high rents in cash and on time, and are less likely to complain about housing defects.

In San Antonio one can find in the markets many Mexican foods not as easily available in Austin, and there are more restaurants, record stores, and radio stations catering to indocumentado tastes. Spanish is a more common language among Anglos in San Antonio than in Austin.

Field Work Procedures

Study of the indocumentado population presents an array of difficulties not generally encountered in social research. Sampling, establishing contacts, and the "protection of human subjects" pose many problems. This is not the place for a full discussion of these difficulties and how we attempted to cope with them. Suffice it to say that these unusual conditions make the study of indocumentados in the field a slower and less efficient process than is generally the case. Since conditions and procedures did not allow us to draw a representative sample, we cannot say with certainty anything about the total indocumentado population of Austin and San Antonio, much less of other parts of the United States. Nor do we attempt to demonstrate the extent of individual variation within these populations. Our goal has been to understand basic patterns for indocumentado populations: how they get to communities of destination, what kinds of jobs they find, their patterns of consumption, the ways they relate to Chicanos, and what happens to their children. There is no one response for any of these questions, but there is enough commonality of experience to permit the basic patterns to be determined.

The first fieldwork in San Antonio, more than three years ago, was on a small scale and was exploratory in nature. Contacts were made through key informants, who introduced us to indocumentados. This resulted basically in a snowball sampling design, working through the social networks of our sponsors. We made a special effort to contact women, and we interviewed several "coyotes" (those who guide the indocumentados across the border) for their experiences in getting indocumentados across, but we did not at that time concentrate on those who were part of the settlement process. Later on, David Benke, as part of his assignment to explore the opportunity structures of San Antonio and Austin, set up interviews with informants knowledgeable about indocumentados and assembled a variety of data from published and unpublished sources.

With the NICHD grant we originally planned to carry out as many as 1200 interviews, but we shifted from a survey emphasis to one more ethnographic in nature when we began work in Austin. In part, this was due to fortuitous circumstances. Codirectors Núñez and Rodríguez had, before the grant award, begun an informal school for the children of indocumentados, and through them we were able to gain entree to their parents. We made the shift mainly, however, for theoretical and methodological reasons. We became intrigued with the problems posed by the settlement process, and it seemed to us that this aspect had received little attention in other research. We shifted from questionnaires not because they are impossible to carry out with this group, although they are difficult to execute on a large scale and in a short time, but because we believe it is difficult to fully identify and characterize the patterns of indocumentado adjustment with questionnaires. We wanted to determine interpersonal relationships within households and to see how household composition changed over time. To take another example, the matter of relationships between Chicano and indocumentados is complex and delicate. If we had depended upon responses to questionnaires we would have obtained polite, "no problem" kinds of responses. Our Chicano interviewers found that it took repeated contacts before indocumentados developed enough trust to say what they really believed.

In Austin we are working intensively with about 50 families. We obtain information on all the approximately 250 members of the households, and we have a file on the household itself. In-depth and semistructured interviews are carried out, generally with recorders; the interviews are then transcribed.

DIMENSIONS OF REPRODUCTION

Reproduction always has been a central preoccupation of demographers. A population will perpetuate itself by ensuring that the "exits" from it (deaths and outmigration) will at least be balanced by the "entries" (births and inmigration). But it is not enough to ensure a supply of warm bodies; there must also be a reproduction of the many statuses and positions that make up a social structure. One of the great merits of Marx is that more than a century ago he saw the necessity to be explicit about the reproduction of a social structure and the mechanisms that make it possible.

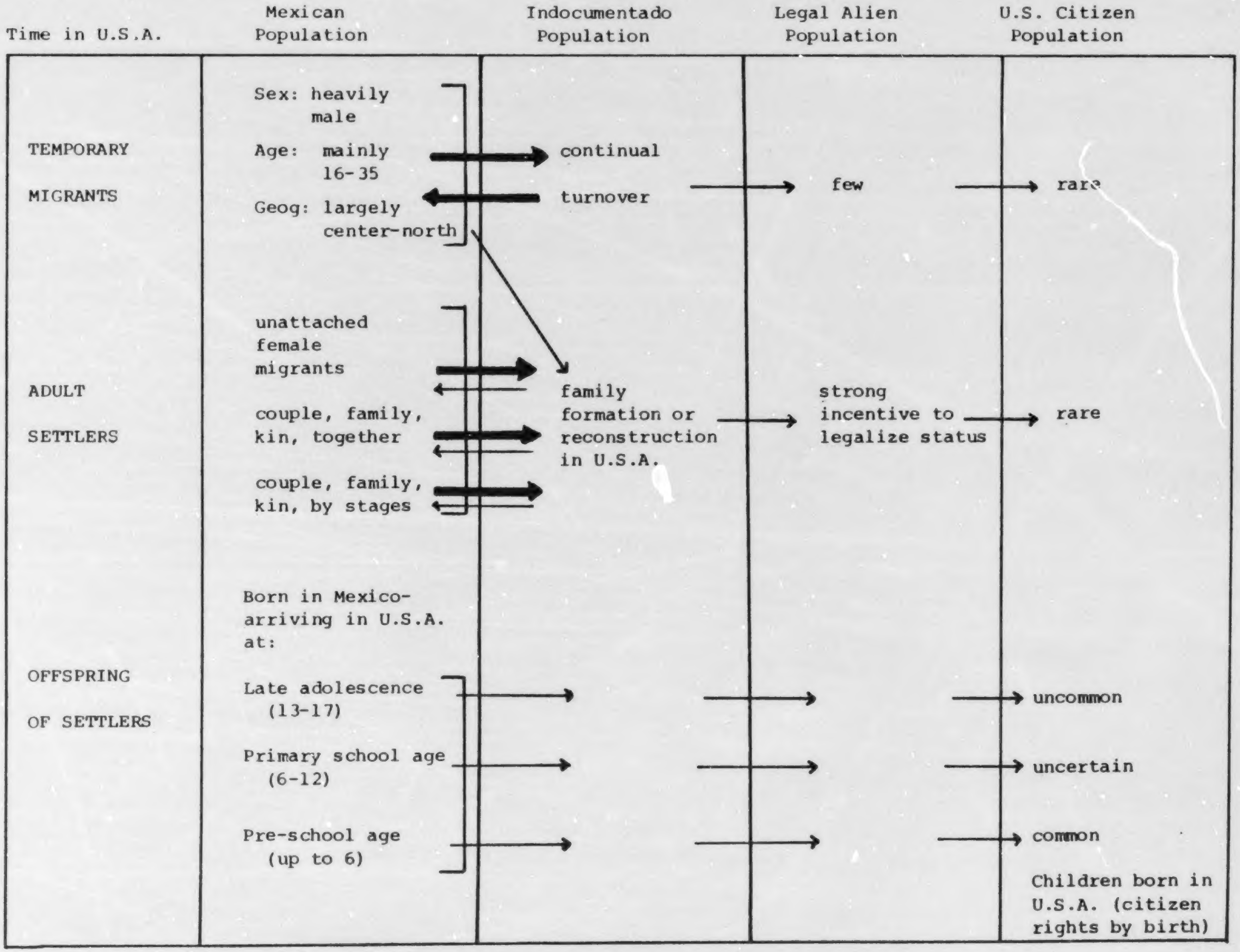
Reproduction is not a simple matter, even under the simplest of conditions—a closed, stationary population undergoing minimal social change--and the special circumstances of the indocumentados make them particularly difficult to capture under the rubrics of demographic and social reproduction. Figure 1 should make this clear. Indocumentado population change is not just a function of three demographic variables: fertility, mortality, and migration. It is also essential to take into account legal status and time in the United States.

The top panel depicts the older, "classic" form of indocumentado migration. Young unattached males, originating mainly in about a dozen Mexican states, cross the border to work for limited periods and then return to Mexico. (Sometimes the same individual will repeat the process several times.) As the arrows are intended to indicate, entries and exits are virtually equal, with the result that there is a continual turnover of the indocumentado population. Few go on to become legal aliens and even fewer become U.S. citizens.

The second panel, "Adult Settlers," is more complex; it must try to represent the various ways by which migrants from Mexico construct settlement patterns. The key feature is the formation of stable unions, legal or consensual, which usually produce offspring. Some ostensibly

Figure 1

Population Change among Migrants in Terms of Legal Status and Time in United States


Time in U.S.A.
Mexican Population
Indocumentado Population
Legal Alien Population
U.S. Citizen Population
TEMPORARY MIGRANTS
Sex: heavily male
Age: mainly 16-35
Geog: largely center-north
continual
turnover
few
rare
ADULT SETTLERS
unattached female migrants
couple, family, kin, together
couple, family, kin, by stages
family formation or reconstruction in U.S.A.
strong incentive to legalize status
rare
OFFSPRING OF SETTLERS
Born in Mexico- arriving in U.S.A. at:
Late adolescence (13-17)
Primary school age (6-12)
Pre-school age (up to 6)
uncommon
uncertain
common
Children born in U.S.A. (citizen rights by birth)

temporary male migrants join this category. Their chances for unions are enhanced by the growing numbers of unattached females crossing the border. Either sex, however, may form unions with legal aliens or American citizens. In addition, unattached migrants may reconstitute family units by arranging for the missing members to be brought across. Finally, there are entire nuclear families coming into the country as a unit. However formed, these family units are more likely than are unattached migrants to remain in the United States (save for visits to Mexico). They want to regularize their situation by becoming legal aliens, but few believe it necessary or desirable to become U.S. citizens.

The children of these families are of special interest, with a complexity all their own. It is essential to distinguish four groups. Those children born in Mexico and brought to the United States as late adolescents (ages 13-17) behaviorally belong in the "Adult Settlers" category, for they are considered both by their parents and by themselves to be adults rather than adolescents. Too old easily to be incorporated into the school system, they generally get full-time jobs, continue to speak Spanish, and maintain their Mexican identity, just as do their parents. In the second group are those of school age (ages 6-12) who often are enrolled in schools, although the older ones may have considerable difficulty "fitting" into the system. The third group, preschool children (ages through 5), are most likely to adjust best to the school system, and spend their formative years (ages 6-14) in the United States. They resemble most the fourth group, those children born in the United States, except that the latter have U.S. citizenship rights by virtue of their birth.[8] Culturally, the great majority of the last two groups will grow up to be Chicanos, since they lack direct contact with Mexico and will acquire competency in English at an early age. In contrast, the late adolescents, and some of the school-age children, like their parents, will continue to consider themselves Mexicans, no matter how long they live in the United States.

It should be apparent that the demographic-citizenship model is both complex and indeterminate. Consider some of the strictly demographic consequences of the fact that migration rather than natural increase is the main source of the perpetuation of the indocumentado population. It is a more unstable source because historically the volume of migration has fluctuated greatly. Because of the importance of return and circular migration, the distinction between gross and net migration is very significant. The sex ratio has none of the predictable regularities discernible in populations dominated by natural increase. Although gaining both absolutely and relatively, the female representation is still much below the male. Finally, migration produces a peculiar age distribution, unlike the symmetrical age-sex pyramid generated by natural increase. Of course, those who settle will have more "normal" demographic patterns, but they still represent a minor share of the total indocumentado population.

In terms of citizenship, there is no inevitable sequential passage from one status to the next--from Mexican residence to indocumentado status to legal alien to U.S. citizen. A return to Mexico is always a possibility. One must also take into account whether the return is voluntary or involuntary.

Social reproduction obviously is dependent upon demographic reproduction to provide people to occupy positions in the social structure. In setting forth the conditions of the social reproduction of indocumentados we are confronted with much of the same complexity that was encountered in discussing demographic reproduction. Social reproduction must take into account two social structures--that in Mexican-origin communities and that in U.S.-destination communities. Fully developed, this could lead us to consider such distinctive features of Mexican peasant communities as the fiesta system or, in the United States, the role of voluntary associations in integrating individuals within the community, all of which lie beyond the scope of this paper. We will concentrate on two crucial features of indocumentado social reproduction: family and kinship networks, and work patterns.

Even in the period of massive structural change that Mexico has experienced over the past 40 years or so, the Mexican family and kinship structure remains at the center of an individual's existence. The question is to what extent indocumentados are able to reproduce their family-kin situations in the United States. The critical distinction between indocumentados who come for brief periods and those who choose to settle is that the former need not attempt any reproduction of family or kin structures here because they are only transient, while the latter must try to constitute such structures. A nuclear family can be formed in the United States or introduced from Mexico, but it is impossible for the full range of the kinship network to be reproduced north of the border. Three generational families occasionally are to be found, but the full reproduction of the impressive array of aunts, uncles, and cousins that Mexico's high-fertility system generates is not possible.

The real question is whether enough of the extended kin system exists to facilitate the incorporation of the migrants into American society.

The pattern of indocumentado migration to the United States displays similarities with internal migration within Mexico, particularly movements from villages to metropolises such as Monterrey (see Balan, Browning, and Jelin, 1975). We have come to recognize that migration is very much a social process in which people migrate to places where there is someone, most often a relative, already known to them. In the case of Austin, a number of families originated from one village. A migratory chain was formed between it and Austin, and as a result new arrivals to Austin can count on assistance.

What we are describing is the functioning of social networks, a concept that has become increasingly important in the interpretation of a variety of behaviors in Third World countries, whether family survival strategies, migration, or labor processes. Social networks are a kind of lubricant that facilitate adjustment and adaptation and reduces personal stress. In the context of indocumentado migration it should be noted that the successful operation of the social network is not a direct function of its size or complexity. To illustrate, one indocumentado family upon arrival may obtain all the help it needs in settling in and finding work from just one family of relatives already living in the community, whereas another incoming family may call upon three or four families and compadres for assistance.

The reproduction of labor depends upon the existence of social networks, especially in finding jobs. Here we consider two other features: skill levels, and social relations. It is sometimes argued that indocumentados will have difficulties in reproducing their skills in the United States because the organization of work differs greatly from that in Mexico. The question becomes, How can Mexican peasants adapt themselves to work in a highly industrialized society? Yet none of our indocumentado respondents mentioned any problems of this nature. Why? The explanation is that in both countries the kind of work these people are called upon to do is manual labor, ranging from such basic skills as wielding a shovel to the more advanced skills of bricklaying, carpentry, painting, etc. Such work is common in Mexico and is easily transferred to a work site in the United States.

What about the social relations on the job? Isn't the change from the small-scale work situation in Mexico to the large bureaucratic structures of the United States a major difference? Typically, indocumentados do not work in large-scale enterprises; when they do, it is often in enclave situations which shield them from the full impact of large bureaucracies. Often the patron relationship is encountered, and if in the United States the patron is sometimes harsh and exploitive of the workers, this is also all too familiar a pattern in Mexico. In that country there also is little job security and few fringe benefits, and the work is physically demanding and the hours long. Thus, in terms of skills and social relations, indocumentados find situations in the United States not greatly different from those in Mexico.

FOUR FORMS OF RESOURCE ACCUMULATION

The settlement process for indocumentados has many aspects; one significant feature that is important in the success, and even the very continuation, of the process is the ability of individuals, families, or households to assemble and make use of a variety of resources. The question is how the diversity of resources can best be addressed in an analytically consistent manner. The model we choose to develop is that of resource accumulation.[9] We first briefly identify the four forms of accumulation, consider their common features, and then indicate how they are applicable to the situation of indocumentados.

The accumulation process is demonstrable in four forms of capital.

1. Financial resources: either in liquid form (money) or in the form of salable assets (property, goods, etc.).
2. Work resources: the various skills needed to execute work tasks, acquired in formal educational institutions or on-the-job training. Work resources as a concept has an affinity to what has come to be known as human resources.
3. Social resources: the development of interpersonal bonds that not only facilitate overall social adjustment in a new locale, but also enhance the opportunities for other forms of resource accumulation. The formation and operation of social networks is central to social resources accumulation.
4. Cultural resources: acquisition of information about the community of settlement that permits a better adaptation to it (growing "savvy" about where to go and how to get things done). In particular it includes language acquisition (in this case, English).

There are common features of the accumulation process which are applicable to one degree or another to the four forms of resources:

1. The temporal dimension. Accumulation takes time, since acquisition is behavioral in nature; one must do something to acquire the forms of resources (e.g., learn a trade, save money, expand a social network, acquire a language).

2. Accumulation is a two-way process. All forms of resources can be used up or dissipated; work skills will atrophy if not practiced; social networks require maintenance through interaction or they will fall apart; and language skills will be lost without practice.
3. Portability. The forms of resources differ in how readily and easily they can be taken from one setting to another. Financial resources are the easiest, but even here the sale of land and housing for cash may be difficult on short notice. As already indicated in the discussion of social reproduction, the portability of work resources of Mexican workers is greater than sometimes assumed. The degree to which an individual or family can "plug into" another social network will vary. In general, cultural resources are not easily portable, although language can be studied prior to the move.
4. Transferability. In varying degrees, capital can be transferred from one individual to another or shared with other members of a family or household. As with portability, financial resources are most easily transferred. It is a much more complex matter with respect to the other three forms of resources. With time and effort many work, social, and cultural resources can be transferred from one person in a household to another, but there are often difficulties--i.e., females take on male work roles, adolescents assume adult positions in social networks. It should be pointed out that a family or household need not have all its members possess the same form of resources to the same degree. Thus, the cultural resources of a family will be enhanced if just one

member, even a child, can acquire enough English skills to act as an intermediary for the others.

In addressing the utility of resource accumulation to the circumstances of indocumentados, it is logical to begin with financial resources. It is axiomatic that the long journey to destinations within the United States requires financial capital (resources). Even the young unattached male who hitches rides to the border, swims across the river on his own, and then walks several hundred miles to his destination, needs something of a stake. But the do-it-yourself approach has become increasingly rare, even among our young male respondents. Now virtually everyone makes use of the services of a "coyote" to get across the border and to be delivered by motorized vehicle to the community of destination. This service is not cheap, the cost varying by distance from destination to border. In 1981, for destinations in Texas 200 to 300 miles beyond the border the going rate for an adult was $350, for children somewhat cheaper. If a family of four were to cross, this would involve a sum of excess of $1000, a sizable amount of money for rural Mexicans.

The money is obtained from savings, by selling valuable assets such as crops, animals, or land, or by loans from relatives, friends and, more rarely, from moneylenders. Rarely will a coyote delay collection of his fee until the client has obtained a job in the United States and is able to pay off the debt by installments. Indocumentados also must have some financial resources to defray costs while they settle in and find a job. Fortunately, this is often not a major consideration, since they can count on the hospitability and help of kin and friends during this period.

The last point introduces another resource form, social resources, which is very important in the migratory process. The existence of social networks, basically made up of kin, explains why so many of the families in our Austin study come from Bejucos, a village on the border of the states of Mexico and Guerrero. Individuals in social networks provide food and shelter to the newly arrived, and are also critical for finding first jobs. One of the most remarkable features of the entire indocumentado story is the rapidity and relative ease by which indocumentados get jobs, generally within a few days of arrival. This is made possible by the fact that the social networks provide up-to-date and reliable information on the existence of jobs that can be filled by indocumentados. As the latter gain experience in the community and expand their cultural resources, they customarily expand their social networks beyond those of kin, thus providing themselves with options that were not available upon first arrival.

Work resources have their own characteristics and logic. As noted, most jobs available to indocumentados rarely demand skills not already acquired on the job in Mexico, even in "traditional" agrarian communities. Such jobs do not require schooling or formal training, and the work resources are quite portable. Some indocumentados have utilized migration within Mexico to acquire work resources that have enabled them to get well-paying positions in the United States. One man, for example, moved from Bejucos to Mexico City, where he received training as a cook in a restaurant. Upon migrating to the United States, he was able to translate this experience into a high-paying position (now $1300 a month) in a restaurant specializing in Mexican food. He has complete authority in the kitchen, hiring a six-man staff (all indocumentados), buying the foodstuffs, and organizing the kitchen routine.

Cultural resources are very largely acquired on the U.S. side of the border. Over time one learns a variety of things--where to get a certain product or service, techniques useful in approaching various local bureaucracies such as hospitals and schools--which make life easier. Most adult indocumentados do not learn English in any systematic fashion, but acquire a minimal basic vocabulary of 100 words or less and key phrases enabling them to perform adequately on the job and in routine shopping situations. This is not really becoming literate, for it does not enable indocumentados to deal with the written word, and their minimal vocabulary often actually inhibits them from making the sustained effort necessary to become literate. Nonetheless, it provides the rudimentary communicative skills necessary to move about in American society.

All four forms of resources can be used up as well as accumulated. Since the main motivation in coming to the United States is financial, indocumentados sometimes are able, by working long hours, to acquire a fairly sizable nest egg. But as illegal aliens they must be prepared for an unforeseeable sharp drop in their financial assets. They or other members of their family may be apprehended and sent back to Mexico; they often return quickly, but getting back entails costs. Also, as part of their social network, they may be called upon to help others meet the costs associated with apprehension. Both kinds of calls may come at any time. For example, one indocumentado for months had been planning a trip back to his village of origin but unexpectedly had to help out a member of his social network and thus depleted his financial reserves to the point that he was forced to cancel the trip. Those desiring to regularize their status by becoming legal aliens must pay attorney fees and other costs running to thousands of dollars.

Work resources may atrophy if skills acquired in Mexico are not utilized. If one were a carpenter or bricklayer in Mexico but a dishwasher in the United States, the pay level may be higher but skills may deteriorate. Social resources also may be lost if the social networks are not actively maintained through continued interaction and the recruitment of new members to replace those who leave.

A number of criticisms have been raised regarding the resource accumulation model suggested here. Robert Bach, discussant of the first version of the paper, was unhappy with our practice of "calling everything capital--it homogenizes by definition rather than analysis the social relationships in which each activity develops." Our switch of terms from capital to resources doubtless would not stay his criticism. We acknowledge that the concept can be abused by overextension, but our intent is to formulate concepts to help account for the conditions that do or do not lead to the incorporation of the individual, family, or household into American society.[10] All that we wish to suggest by "incorporation" is simply this: to the degree that individuals and families or households can accumulate the four kinds of resources, the more successful they will be in providing themselves a reasonably secure existence in the United States.

We believe that it is helpful from an analytic standpoint to use one noun, resources, to depict various forms of accumulation, but homogenization is far from our intent. Contrary to our initial formulation, we believe that financial, work, social, and cultural resources differ sufficiently so that it makes little sense to seek a common metric that could be used to develop an overall resource accumulation scale. Rather, we wish to emphasize that there is a strong interactive relationship among the four resources and that a strictly additive model would be inappropriate.

THE CHICANO-INDOCUMENTADO SEPARATION MODEL

The third model we wish to present is one that on the face of it may appear to be unnecessary. It is often assumed that the absorption of indocumentados into the host community of Chicanos presents few problems for either group—since they share a common heritage, language, religion, cuisine, etc., indocumentados simply become additions to the Chicano population. Some writers use the terms Chicano and Mexican interchangeably in their analyses.[11] And as a recent study of Chicano cultural identity and the ability of Chicanos to maintain cultural integrity in the face of the dominant Anglo culture concludes, "as long as there is substantial immigration from Mexico, the Chicano cultural base will be continuously reinforced" (Bowman, 1981, p. 51).

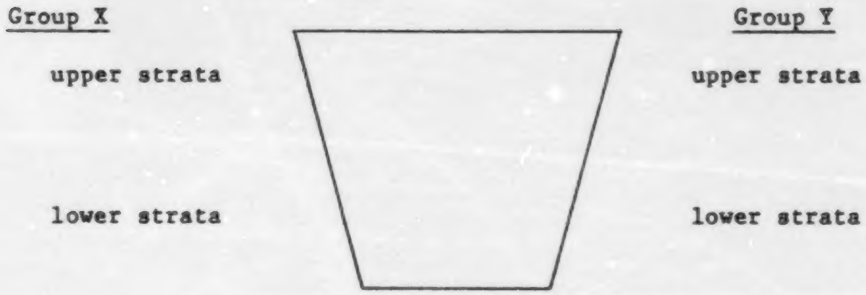
We must confess that the members of the Texas Indocumentado Study essentially took a similar position at the beginning of the investigation some years ago. Our experience has led us to take quite a different stance. Rather than assume an automatic entry of Mexican immigrants into the Chicano population, we see the indocumentado-Chicano relation as a complex phenomenon. Indeed, it is possible to take the position that the development of a distinctive Chicano culture is inhibited rather than facilitated by the immigration of Mexicans and the importation of things Mexican.

While historical accounts of the Chicano ethnic group usually recount the importance of early Mexican immigration for the demographic expansion of the Chicano people, they do not focus on the ways by which Mexicans "become" Chicanos. The dynamics of incorporation are largely ignored. Our position is that the relationship of indocumentados and Chicanos cannot be assumed to consist of an inevitable incorporation of the latter by the former. Consequently, the relationship must be subjected to a more elaborate and explicit theoretical exploration. We attempt this by the conceptual development of a "separation" model for indocumentados and Chicanos along three dimensions.

The Separation Model

In the model, "separation" refers to a distance between groups. In its most simple form we have Group X—Group Y. This says only that, whatever the metric of measurement, a certain separation exists, not whether the separation is increasing or decreasing over time. Let us emphasize that separation does not imply active hostility, simply that there is not much social interaction.

The formulation also makes no allowance for the internal differentiation of the groups. There are a number of ways such differentiation could be recognized; we shall deal with only one, social stratification, and that only in a simple distinction between higher and lower strata. Graphically, we delineate this as follows:



The interaction of the above is that there is a separation between Group X and Group Y, and that the separation is greatest between the upper strata of both groups.

Applying this general model to the situation of Chicanos and indocumentados we find that, especially in the last few decades, there has been a considerable differentiation by social stratification among the Chicano population, meaning an increasing representation in the upper as well as the lower strata. In contrast, the indocumentado population still is very heavily concentrated in the lower strata. True, there is some differentiation, and the settlement process is likely to increase it over time, but there are practically no professional or semiprofessional indocumentados, so the stratification differences as such are narrow.

However, we believe that there is an important differentiation among indocumentados depending on whether they were rural or urban residents in Mexico. The latter is likely to be associated with somewhat higher educational levels and more sophistication in dealing with urban conditions (a respondent fresh from rural Mexico expressed his discomfort in living in Austin by saying there were too many "fences") and often more varied work experience. The dimensions of intergroup separation between indocumentados and Chicanos we address are: (1) on the job, (2) associational (interpersonal relations, mainly outside of the work context), and (3) cultural (ranging from linguistic style to musical preferences).

Work Separation

Briefly, what is covered here is not the extent of informal interpersonal contacts on the job between Chicanos and indocumentados (this is covered by the associational category) but the features of the technical division of labor and the social division of labor.[12] The technical divison of labor simply specifies what concrete work tasks are required of individuals. More so than Chicanos, indocumentados have work tasks that do not require much contact with others. They seldom are put in positions that require interaction with customers or clients where English is used. Even within plants or firms where contact with the public is not a consideration, they often do tasks that can be done without much verbal communication. (Indeed, one way of identifying a low-status job is to note that it doesn't require much communication; digging ditches, washing dishes, cleaning hotel rooms, and simple assembly line operations can be performed with minimal English or Spanish.)

The social division of labor concerns which ethnic groups occupy what positions in the labor hierarchy.[13] Of the three dimensions in our separation framework, we hypothesize work separation to be the condition of least apartness between indocumentados and Chicanos, especially the lower-working-class segment of the Chicano ethnic group. These Chicanos and indocumentados have similar labor characteristics. Both are situated in the inferior sector of the labor market. Their employment is characterized by heavy, dirty (and at times dangerous) work, irregular work schedules, and low wages. The greatest degree of work separation we hypothesize between the two groups is that between indocumentados and upper-class Chicanos. This difference is between indocumentados who work predominantly as manual laborers and Chicanos in professional and managerial jobs.

Associational Separation

The condition of associational separation refers to the absence of interpersonal relations between members of different groups. For example, if members of one group interact frequently with members of a second group by developing many enduring friendships and intermarrying frequently, then the separation between these two groups can be described as minimal. However, if there is little association, and then usually only in secondary impersonal relationships, the associational separation is extensive. Using this concept, we hypothesize that there is some separation between indocumentados and all social-class segments of the Chicano population. Unlike the condition of work separation, we hypothesize that there is a somewhat greater associational separation between indocumentados and lower-working-class Chicanos. Two key factors contributing to this separation are working conditions—most indocumentados work exclusively with other indocumentados—and the development of endogamous social networks among indocumentados. Clearly, these two factors are related. However, the analytical value of considering them separately is that they may result from different circumstances. On the one hand, the condition of all-indocumentado work forces, which precludes or at least greatly reduces indocumentado-Chicano interaction, may be due to the deliberate hiring practices of employers. On the other hand, the development of exclusively endogamous social networks among indocumentados, which needless to say also restricts Chicano-indocumentado relations, may be a consequence of indocumentados trying to maximize within-group resources for adaptation. This particular within-group adaptive strategy doubtless is related to the fact that the community is a relatively new destination for indocumentados. Thus, to the extent (which we believe is considerable) that these two factors contribute to associational separation, one is due to a condition that is exogamous to both indocumentado and Chicano workers (employer preference) and the other is due to an adaptation strategy.

Two other factors conducive to associational separation are the residential segregation of indocumentados and, to some extent, the mutual ingroup and outgroup perceptions of Chicanos and indocumentados. Of course, the associational separation between indocumentados and the upper-strata segment of the Chicano ethnic group consists basically of the social distance that results from differences in social status. Hence indocumentados and lower-strata Chicanos may be seen as having greater associational separation from upper-strata Chicanos than from each other. While in some instances upper-strata Chicanos may associate with lower-strata Chicanos (e.g., in a political campaign), the occurrence of this association with the politically powerless indocumentado group is even more infrequent. The only significant interactions that we project between indocumentado and upper-strata Chicanos are employer-employee relationships and occasionally agency-client relationships.

Cultural Separation

By "cultural separation" we mean the difference between groups in terms of ways of behaving. The term thus refers to distance among groups due to differences in, for example, language patterns, cuisine, folkways, and musical preference.[14] We hypothesize that cultural separation exists between indocumentados and Chicanos.

Among the most evident cultural differences between Chicanos and indocumentados are the following. In contrast to the indocumentados' almost exclusive reliance upon Spanish, Chicanos have developed a linguistic style that differs in pronunciation, grammatical constructions, and vocabulary from Mexican Spanish. But Chicanos often speak a combination of Spanish and English, switching from one language to another in the course of a conversation. (A number of Chicano writers deliberately have incorporated this feature in developing a distinctive style.)

Differences in cuisine are also evident. While the indocumentado's meal preparation may be affected by income and the availability of ingredients common in Mexico, it is clear that there are basic differences. For example, there are indocumentado preferences for corn tortillas, sopas, and traditional Mexican dishes that contrast with the Chicano preferences for flour tortillas, coffee, traditional barrio dishes, and fast-food meals. Of course, indocumentados and Chicanos do share food preferences (e.g., menudo, and the staples of corn, rice, and beans) but the dissimilarities are important.

Another significant cultural difference between indocumentados and Chicanos exists in tastes for music. The general preference of indocumentados for purely Mexican music (a preference which has not gone unnoticed by Chicano entrepreneurs in the music industry) contrasts sharply with the Chicanos' wide-ranging preferences of Mexican, rock, and country-western music. Even within the Mexican music domain there is some difference between the two groups: music based on tropical forms is popular among many indocumentados; the Chicano preference is more for boleros, rancheras, and Chicano country, played in a distinctive Chicano style.

Obviously there is some interrelation between the three conditions of separation. The most evident interrelation is between associational separation and cultural separation. To the extent that indocumentado social events (dances, festival gatherings, etc.) are based entirely on traditional Mexican practices, present levels of associational separation will continue to exist. In Austin this relationship is well illustrated by a certain popular dance hall that is often patronized by close to a thousand indocumentados on Friday nights and by an equal number of Chicanos on Saturday nights. Each group has its own preferred musical performers (Mexican groups brought over from Mexico for indocumentados, and generally local and state Chicano groups for Chicano audiences). The consequence is that no more than 5% of the patrons on Friday nights are Chicanos; about the same percentage of the patrons on Saturday nights are indocumentados.

The importation of Mexican musicians raises an important point that can only be briefly addressed in this paper. Much has been written about the Americanization of Mexico through the penetration of U.S. mass culture in the media south of the border. Less appreciated is the strong penetration of Mexican cultural products in the United States, especially in the Southwest, directed mainly at a Chicano audience. Mexican musicians appear in person and on records, Mexican movies are regularly screened, and Spanish-language television stations rely heavily upon Mexican programs. In short, Mexican capital (often in joint venture with local Chicano businessmen) has been quite successful in tapping large and growing markets in the United States. This puts the Chicano at some disadvantage. Their musical groups do not regularly tour Mexico; there are few Chicano movies, or television programs, aside from some local talk shows. In short, Chicano production networks are no match for those of Mexican capitalists. (In distribution there is frequently a combination of Mexican and.Chicano capital.) One hardly can expect a distinctive Chicano culture to flourish amid this competition.

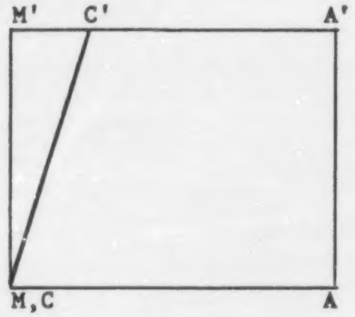
The pervasiveness of the Chicano-indocumentado separation is perhaps best demonstrated in the barrio setting. In this environment, where Chicanos and indocumentados often live in close proximity, social interaction largely occurs within and not between the two groups. As in work situations, even if Chicanos are in close proximity, associational contacts of indocumentados are with other indocumentados. On ceremonial occasions (e.g., baptisms, birthdays) most if not all of the invited guests will be indocumentados. Even the indocumentado children are characterized by a state of separation from Chicano children. While the two groups of children may interact at school, once they go home there is separation. Let us repeat the point made earlier: separation does not imply active hostility, simply that there is little social interaction.

Indocumentado Enclaves

It is our view that the conditions of separation we have briefly described constitute a state of enclave existence for indocumentados.[15] To the extent that the barrio existence of Chicanos represents an enclave within the larger Anglo society, indocumentados live in enclaves within enclaves. To a degree that we would not have thought possible prior to undertaking our investigation, the social and cultural perimeters of indocumentado interaction contain the indocumentado population alone. Although most indocumentados live in Chicano barrios, they may be characterized as in, but not of, the barrio, sticking pretty much to themselves. Even in work, an activity that requires a daily detachment from the household, indocumentados maintain associational enclaves that limit their contacts with other ethnic groups, including Chicanos.

Historically, we do not believe that this enclave pattern was characteristic of indocumentados; we view this condition as a recent phenomenon. Early in this century, say 1900 to 1910, there was probably very little cultural distinction between Mexicans living on both sides of the border. All were mexicanos sharing pretty much a common cultura mexicana. The term "Chicano" was not known at that time. From the perspective of the larger Anglo society, we can depict that early common culture condition as follows:

1900-1910

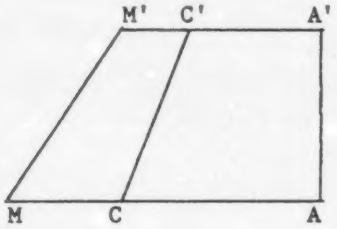


In this representation all social distances between Anglos and Chicanos are greater than any social distance between (and within) Mexicanos and Chicanos. The separation C'-A' is used to indicate the beginnings of association between upper-strata Chicanos (though few in number) and Anglo-Americans, such as through intermarriage. Separation C-A is used to describe the castelike separation that existed between the lower-working-class segments of the Anglo and Chicano populations. Clearly, it is safe to assume that in this early period, in which there was little difference in Mexican culture on both sides of the border, Mexican immigrants easily integrated with the Chicano subculture.

There are three reasons why there was so little differentiation between Mexicanos and Chicanos at that time. First, passage back and forth across the border was a casual matter, so the legality issue which demarcates indocumentados from legal aliens and U.S.-born Chicanos was not as prominent as it is today. Second, the socioeconomic level of both groups was much the same--very low. There was, except for the very few Spanish-origin elite groups throughout the Southwest, very little socioeconomic differentiation. Third, the development of a really distinctive Chicano culture had barely begun. It is important to emphasize how recent is the development of Chicano culture, as distinguished from Mexican culture.

Today, we believe the situation to be quite different. As our model has tried to make clear, there exists a significant separation between Chicanos and Mexican immigrants, of whom the great majority are indocumentados. From the perspective of the larger U.S. society, we view the social separation as follows:

1980



Partly as a consequence of increased adaptation to the larger society and partly as a consequence of cultural development resulting from minority status (i.e., exclusion from full participation and power in the larger society), Chicano culture has evolved with a degree of uniqueness. This cultural development, we believe, reduces the ease of absorption of indocumentados into the Chicano ethnic group.

The matter should be viewed within the context of the relative size of the two populations. This is not the place to take up the troublesome problem of estimating the size of the indocumentado population, but simply for the sake of argument let us assume that the current size of the Chicano population is about eight million and that of the indocumentado population is in the neighborhood of two million. The ratio is four to one; our point simply is to demonstrate that both are large populations and the effects of one upon the other is considerable. Because of the concentration of indocumentados in the adult age range their impact is greater than the numbers alone would suggest.

In concluding our discussion of the separation model, we wish to emphasize that these relations will not remain unchanging. The magnitude of indocumentado flows may rise or fall, the economic conditions and their fluctuations in Mexico and the United States will affect both groups, and the political climate will have an independent impact. Without doubt, the way in which the U.S. government deals (or fails to deal) with the issue of indocumentado migration will influence the separation of Chicanos and indocumentados. If the direction is to a large extent in the form of a narrow, bracero labor-recruitment program limiting entries to a short term and actively discouraging the settlement process, this would maximize the enclave pattern in which there would be limited contacts between Chicanos and indocumentados. Should the government acknowledge the presence of the settlement group and provide them with some, if not all, of the benefits of citizenship, this may bring Chicanos and indocumentados closer together as the latter become more involved in American society.

IMPLICATIONS OF THE THREE MODELS FOR THE ANALYSIS OF INDOCUMENTADO LABOR

Much of this paper has been devoted to elaboration of three models. Before addressing the matter of their utility for the analysis of work, let us recall why the models were introduced in the first place. Fundamentally, their formulation was in response to the shift from a consideration of indocumentado migration as one of short-term, return migration of young unattached males to that of migration as a settlement process involving family formation and family reconstruction. This change represents a basic transformation, affecting virtually every aspect of migrants' lives.

Although the three models have been considered separately, there are a number of themes that are common to all. Time is of central importance, whether taken as historical time or as in points marking events in the individual and family life cycles. Time is also related to another omnipresent theme, the legal status of the migrants, whose behavior is conditioned by their present (and prospective) legal status. Social networks, though identified as the major feature of social accumulation, have an importance that transcends a location in one particular model.

This point can be generalized. Our three models are not intended to be considered as discrete but as complementary. There are interfaces and interrelationships at many points, not all of which we identified. The reproduction model, as has been noted, is the most inclusive of the three. Resource accumulation operates on the more restricted levels of individuals and families. (One could consider the forms of resource accumulation of entire populations, e.g., ethnic groups, but this may stretch the meaning of accumulation too much.) The separation model addresses the relationships between two or more groups on a structural level and, to a degree not developed in this paper, leads to a consideration of the place of indocumentados within American society as a whole. But none of the models is intended to be used exclusively on just one level of analysis.

The Nexus of Family or Household and Work

It is logical to begin the discussion of the implications of the models for the labor process with a consideration of the family or household, for nothing serves to identify the settlement process more sharply than that of the family as contrasted with the unattached migrant. An individual here for only a short time can engage in all kinds of "unnatural" behavior (e.g., working 70 or more hours a week, sharing a room with two or three migrants, saving and sending home one-half or more of income). This is possible because the time horizon is short, obligations in the United States are few, goals are limited--to earn as much money as possible in a short time.

A family changes all this, whether intended or not. The settlement process requires a different set of strategies that must be put into motion. Paradoxically, the family may serve to increase the ability of its members to sustain themselves while at the same time increasing their vulnerability. The advantage is that several members may contribute to family income and the performance of household tasks while the vulnerability is increased because the needs and requirements of families become more diversified and difficult to satisfy.

Indocumentado families must develop their strategies under a number of unfavorable conditions. First, by not having legal status they are not eligible in large measure for the range of welfare services available to poor families in the United States. None of our indocumentado families lives in public housing; none has unemployment compensation, and few have regular access to food stamps.[16] Second, most of the families have been rather recently formed; and the children are therefore mostly still too young to contribute to family income. This means these families are at the most vulnerable stage of the family life cycle when child costs (hospital delivery, infant illnesses, etc.) are often high. Third, as has been repeatedly mentioned, indocumentados have low-paying jobs characterized by instability of employment and by wide swings in hours of work.

How do indocumentado families strive to overcome their disadvantaged situations? Basically, by trying to maximize the contributors to household income and the fulfillment of household maintenance chores. This effort takes several forms. In terms of housing, only a small fraction of our families live in households limited to the nuclear family. Most lived with related or nonrelated individuals, and there are a number of multiple-family households. Some of the latter are a result of newly arrived migrants who moved in with relatives. In these cases it is made clear that after a short settling-in period (a couple of weeks) the recently arrived indocumentados are expected to contribute to the financial maintenance of the household. Even close relatives who are invited to come are expected to do their share.

A second way to maximize household income is to ignore the Mexican norm that a mother with children should not work outside the home. Among our families, the woman who did not work was the rarity. Not surprising, many indocumentado women had very full "double days;" working full time and at home assuming the major responsibility for child care, food preparation, and household chores, including shopping. (The fathers after work helped around the house and with the shopping, but did little cooking or child care.)

A third way is the utilization of the labor of children. If the family is fortunate enough to have teen-age children, some of the children are encouraged to enter the labor force full time, simply skipping school. (Other families, however, believe their children, even the older ones, must have schooling if they are to have any success in American society, so they forego the income these children could contribute.) Even young children, especially girls, are given major responsibility for the care of infants and younger children while the mother is at work. In those instances where such labor is not available or the older children are in school, the parents pay neighbors (sometimes Chicana women) to look after the children. Household chores and preparation of meals are often assigned to the older children.

The fourth strategy adopted by families is to take in boarders (unrelated and related individuals). This is often characteristic of families where the father has a job (e.g., construction) that provides widely fluctuating income. The logic here is that rents paid by two or three boarders serve to guarantee that the monthly rent could be met even in times of bad weather or slack work when the head of household earns little. However, there are some cases in which the father has a relatively secure and good income and the family still takes in boarders. This is an instance of efforts to maximize financial accumulation.

One consequence of these strategies is a high degree of household compositional instability and turnover. The core nuclear family may lose its boarders or relatives, and sometimes the joint-family households split up. Members may return to Mexico for some months or even permanently, while others move to another part of the country. Newly arrived indocumentados leave to set up their own households. Obviously, this turnover introduces considerable uncertainty.[17] In one instance the head of household controlled the incomes of six adult contributors and was able to make payments on two pickup trucks and several major household appliances. Within a year, however, household turnover had reduced the contributors to two, and the man was in severe financial straits.

The practice of turnover and the accompanying moves from one residence to another may appear to entail substantial costs in making deposits on apartments or housing and for utilities. The common practice is for the current residents to pay under the name of the first indocumentado who occupied the residence. The one exception is phones. Indocumentados often keep in contact with relatives in Mexico by phone and in doing so run up substantial bills. No one wants to get stuck with large, unpaid bills, so each family must establish service under its own name.

In linking work and the family or household, it is the resource accumulation model that has the greatest salience. It shows how the various members of the family or household can be mobilized not only for multiple contributions to financial capital, but also how social and cultural capital accumulations can be useful in financial and work accumulation.

Employer Benefits of Indocumented Labor

Employers are virtually unanimous in categorizing indocumentados as good workers, and they often compare them very favorably with native workers, especially Chicanos. This should come as no surprise because indocumentados, if for no other reason than their illegal status, are quite tractable workers, and are very responsive to their employers' desires. We will set forth the five ways in which employers benefit from indocumentado labor and then ask whether the settlement process has any impact on these characteristics.

1. Speeded-up work pace. The benefit is greater output and therefore higher productivity. In addition to an increased pace, indocumentados are not always provided the rest periods that other workers receive, and this too increases output.

2. Hiring at one level and then requiring indocumentados to do higher-level work at no increase in pay. After a short period of on-the-job training, the indocumentado may be required to do a higher-skill task. Illustrations are in restaurants, where dishwashers are made to work as assistant cooks, and in factories, where machine operators have to work as repairmen when the machines break down.

3. Erratic work schedules. Employers expect indocumentados to be on call whenever needed and to work overtime. In a landscaping company indocumentados worked up to 77 hours per week, but were not paid for overtime hours. A produce-packing company required workers to be on call at any time of the day or night when the produce arrived. Those who did not show were suspended for several days. In a tortilleria where the antiquated machinery frequently broke down, workers were not paid while they waited for the machines to be repaired.

4. Hard and dangerous working conditions. Employers skimp on investments that would provide for more pleasant and safer working conditions. For example, in several food-preparation businesses, workers had to labor in hot and poorly ventilated areas where not even fans were provided. A cement precasting fabricator had indocumentados loading large cement columns onto trailers. Not provided with gloves or steel-toe shoes, they experienced broken toes and fingers.

5. Low wage costs. This is more complex than simply whether the employer pays the minimum wage. The majority, but not all, do so. For example, the employer of an indocumentado four-man painting crew had them on the job from seven in the morning till eight in the evening, six days a week, and paid each worker just $20 a day. In restaurants, workers were charged for meals they had no time to eat. The practice of making deductions for services not received is not uncommon. Thus, even though many employers pay minimum wages, their labor costs still are substantially below that paid to native labor because they do not pay overtime or various fringe benefits (e.g., insurance, retirement). In addition, indocumentados are often kept at minimum wage levels for long periods. One national manufacturing corporation maintained indocumentados at the minimum wage for the first year and a half of employment. The few who earned $4 or more an hour usually had supervisory or semisupervisory responsibilities or had "proven" themselves over several years.

It is no wonder that employers declare themselves happy to have undocumented workers, but it is the temporary migrant who is the most tractable. Those who have more experience and are in the United States as part of a settlement process sooner or later question and sometimes resist such work practices. The change is partly a matter of cultural resource accumulation, as they learn how native workers are treated, and partly a matter of unwillingness to accept poor conditions over an indefinite period of time, in contrast to the short periods characteristic of return and circular migrants. Thus we find that over time indocumentados did come to resist a speeded-up work pace, taking on higher skill tasks at the same pay, or holding jobs with greater responsibilities without higher pay. They also become more unwilling to completely subordinate their non-work life to the demands of employers for erratic work schedules and long hours. They are willing to complain directly to owners or supervisors about poor or dangerous work conditions. They can bring themselves to petition individually or collectively for pay raises.

These efforts to assert themselves are not often successful. Many employers continue to operate on the assumption that there is an unlimited supply of indocumentado labor. If workers complain or resist, then it is simply a matter of getting rid of them and hiring others. And employers can always threaten to turn them in to the Immigration and Naturalization Service to keep them in line.

Still, we believe that to the extent the "settlers" represent an increasing proportion of the total indocumentado population, the greater the likelihood that indocumentado workers will assert themselves and will be less tractable to employer control.

Work and Other Forms of Indocumentado Social Mobility

Discussion of the prospects for social mobility among indocumentados can begin by reference to the enclave existence of the great majority of them and how this is related to jobs.

When indocumentados are hired they can be considered either as individuals or as members of a social group. The distinction is as follows.

As individuals, indocumentados are a numerical minority in the firm and they are individually incorporated with various work crews. They are hired as individuals, and employers do not systematically extract benefits from them on the basis of their illegal status.

As members of a social group, indocumentados make up the majority of the work force, or at least their work crews are made up entirely of indocumentados. Employers consider them as a distinct social group and often will try to extract benefits from them because of such an identification.

It might be assumed that wherever possible indocumentados will seek to be hired on an individual rather than a group basis, for it would be to their advantage to be considered just like other workers. But this is not generally the case. Indocumentados tend to form homogeneous work groups. Why? We believe part of the answer is to be found in the separation model in which indocumentados represent an enclave within an enclave. Associated with it is the social network that is part of social resources. Most indocumentado immigrants to a community make use of the social network linking this community to the one of origin in Mexico. This pattern has a decisive impact on how they find jobs. In effect, indocumentados recruit other indocumentados, thus increasing the homogeneity of the work group. This may occur independently of whether employers make deliberate efforts to hire indocumentados, but often the two practices are complementary. Our evidence indicates clearly that indocumentados will strive for homogeneity within the work group, as is indicated by the case in which an employer hired a Chicano and put him into a work crew of six indocumentados. He did not last long, for the hostility and lack of cooperation of the others forced him out. Thus, we believe that the in-group character of much of indocumentado employment serves to inhibit job mobility. Interestingly enough, while this pattern was found both in Austin and in San Antonio, it was the latter that had a higher rate of individual placement than had Austin. Perhaps the very fact of the much larger proportional representation of Chicanos made it easier for indocumentados to blend in on an individual basis.

As has already been suggested, there is not much occupational or job mobility among indocumentados, either in Austin or San Antonio. Women are almost completely in low-status, dead-end jobs that have very restricted opportunities for moving up to a higher status position. There is more variation among the men. Two, in fact, had obtained responsible and well-paying positions as chefs in restaurants specializing in Mexican food, but they were truly exceptional. Most men start at the minimum wage and they must wait months for nickel and dime wage increases up to about $3.75 an hour. The few indocumentados earning $4.00 an hour or more had either the seniority of three or more years experience or had taken on supervisory responsibilities, generally of an informal designation.

Among indocumentados, it is not occupational or job mobility that serves to differentiate them. Status changes come mainly by financial accumulation in the form of property. For example, the ability to buy a car gives indocumentados a higher status because it shows that they have control over an important part of their existence—transportation. A late model can heighten one's status by advertising the owner as financially resourceful. Those without cars spoke of those with them as having to "struggle less."

Possessing a car confers distinction upon the family as well as the individual, but even more of a status symbol signifying that the family is "making it" is the conversion of rented houses or apartments into "homes." (Two or three indocumentado families are buying their own homes, but this is not a realistic consideration for the typical family.) This transformation consists of getting enough financial security so that boarders are no longer needed. Household improvements are introduced—

buying furniture, putting down floor coverings, getting new curtains, adding household appliances. Indocumentado wives are especially concerned with improving their homes and they will explicitly compare their house furnishings with those of other indocumentado families.

Other than following the changes in the material possessions of indocumentado families, the members of this group did not engage in much discussion of social mobility. Probably the reluctance to do so was related to the recognition that the chances for any really significant social mobility depended upon something not directly linked to one's work skills or one's skills in household management. This factor is one's legal status. Several respondents reported that they believed they could not effectively improve their employment situations until they had acquired the proper legal status. They said that they knew this, as did their employer.

It is for this reason that indocumentado families follow closely the efforts of the national government to formulate a national policy concerning indocumentados. Obviously, those now in the settlement process would welcome the opportunity to acquire legal status quickly and cheaply. Paying a lawyer to guide one's case through the long and convoluted legal process costs thousands of dollars, with no guarantee that the petition will be successful. Even though it is a major drain on their financial resource accumulation, families are willing to take the risk because so much hinges on legal status.

There is one way to promote social mobility that also enhances one's prospects for obtaining legal status. Unfortunately, its rewards entail a considerable delay. Throughout the world one of the incentives for undertaking rural to urban migration and international migration is not the prospect of intragenerational mobility but rather intergenerational mobility. In other words, many indocumentados are realistic enough to know that their own prospects for job mobility are very low but they are much more optimistic that their children will do well. And if the children are born here they automatically have rights to citizenship, which provides preferential consideration in getting the parent's legal status changed.

In conversations, indocumentados make it clear that they expect their children to have better economic opportunities than their own. This viewpoint is reflected through two independent but related factors. The first is that their children will be better "preparado." That is, their children's work resources (skills) will be superior (generally stated as "knowing how to do other jobs"). There is a somewhat vaguely expressed notion that the United States is a more open and resourceful society than is Mexico, and therefore the "opportunity structures" available to their children are more diversified and richer.

The first reason is linked to the second and is in an important sense dependent upon it. The principal mechanism by which their children may obtain better jobs is through education. But education has a meaning special to indocumentados: it is the ability to handle English in its spoken and written forms. Independent of any vocational skills acquired, becoming competent in English will permit their children to open doors that will always remain closed to them. So indocumentado parents tend to be quite positive and supportive in seeing that their children enter and stay in school. (An indication of the commitment on the part of these parents is that enrolling their children in schools potentially makes them more exposed to the risk of apprehension.) For the parents, the full payoff will be some time in the future, but even quite young children who know English can be valuable intermediaries between their parents and Anglo society.

NOTES

[1] Let us immediately set forth our own preferences for labels to be attached to the populations we will review. Our choices are *indocumentados* (shorter and more descriptively correct than the English term "undocumented workers," not all of whom are workers); *Chicanos* (admittedly not the choice of all Mexican-descent citizens of the United States, but it too is less clumsy than the English "Mexican Americans"); and *mexicanos* (to denote all those born in Mexico but resident in the United States).

[2] This paper is not intended as a survey of the growing literature. See, for example, Corwin (1978), Cornelius (1978) and Select Commission on Immigration and Refugee Policy (1981). As a point of reference for the Chicano population, see Tienda (1981).

[3] Still the most frequently cited study based on this approach is North and Houston (1976).

[4] A recent effort to provide the "big picture" of international migration on a global basis is Portes (1981).

[5] The work of Castles and Kosack (1973) is a formidable attempt to analyze international migratory labor in Western Europe utilizing the two approaches.

[6] We report the city rather than the metropolitan area populations because indocumentados tend to congregate in the inner cities, where we concentrated our investigations.

[7] A good description of this labor recruitment is by a historian, Reisler (1976).

[8] This is not to say that they are fully able to take advantage of their rights. Undoubtedly, their parents' lack of legal status, along with other conditions associated with minority status, affects their ability to do so.

[9] In the conference version of this paper we used the term capital accumulation, our intent being to take a concept familiar in the economics literature and then to extend it to other areas of behavior. In France, Bourdieu (1977) has taken a similar direction, and although we have tried to work out our formulation independently of his efforts, it seemed a good idea to suggest a certain continuity in approach. Unfortunately, capital accumulation as a concept has connotations that are not necessary for us to assume and which serve to cloud rather than clarify the issues. Marxists see capital as something that is appropriated, but we do not make this assumption. On the other hand, neoclassical economists consider capital accumulation in a more restricted sense than our intent. It therefore is more prudent to switch from capital accumulation to resource accumulation, the latter being a more general concept, less freighted with specific meanings.

[10] The term "incorporation" requires comment. It is deliberately selected from among a number of possible terms—"assimilation, absorption," "integration"—because we wanted a neutral, even colorless, connotation.

[11] For example, in Acuña's well-known study (1981), an index entry reads "Mexicans. See also Chicanos."

[12] Our use of these categories of the division of labor is derived from the work of Poulantzas (1975) and Wright (1978).

[13] Implicit is the condition that positions in the labor hierarchy are interrelated both through the (technical) process of production and the work relations of employees.

[14] Behaviors in these cultural realms have symbolic purposes, so it is possible to speak of cultural separation as symbolic perception and meaning.

[15] Because indocumentados are able to fulfill various cultural, social, and economic needs among themselves, we believe it appropriate to describe them as forming an enclave.

[16] Food stamps are available only for legal residents of the United States. Heer and Falasco (1982) present some startling results from their study of Los Angeles County, California. For the period August 1980 through March 1981, they estimate that 13.2% of all county births were to indocumentado mothers. They also report that 19% of the indocumentado mothers received food stamp income and 20% were enrolled in the Medi-Cal Program.

[17] Uncertainty is on the part of the indocumentados. Employers, who consider this labor homogeneous, are not uncertain. Consistent with the position taken by Piore, it is our belief that employers act on the assumption that there is an unlimited supply of undocumented workers.

REFERENCES

Acuña, Rodolfo. 1981. *Occupied America: A history of Chicanos*. New York: Harper and Row.

Balan, Jorge, Harley Browning, and Elizabeth Jelin. 1973. *Men in a developing society*. Austin: University of Texas Press.

Bourdieu, Pierre. 1977. *Reproduction in education, society and culture*. Beverly Hills, Calif.: Sage Publishing.

Bowman, Carl. 1981. Between cultures: Toward an understanding of the cultural production of Chicanos. In Marta Tienda (with the collaboration of Carl Bowman and C. Matthew Snipp), *Socioeconomic attainment and ethnicity: Toward an understanding of the labor market experiences of Chicanos in the U.S*. Springfield, Va.: National Technical Information Service.

Castles, Stephen, and Godula Kosack. 1973. *Immigrant workers and class structure in Western Europe*. London: Oxford University Press.

Cornelius, Wayne A. 1978. Mexican migration to the United States; causes, cousequences and U.S. responses. Revised expanded version of a paper presented to the Study Group on Immigration and U.S. Foreign Policy, Council on Foreign Relations, Washington, D.C.: June 8.

Corwin, Arthur, ed. 1978. *Immigrants ... and immigrants: Perspectives on Mexican labor migration to the United States*. Westport, Conn.: Greenwood Press.

Heer, David M., and Dee Falasco. 1982. The socioeconomic status of recent mothers of Mexican origin in Los Angeles county: A comparison of undocumented migrants, legal migrants, and native citizens. Paper prepared for the Annual Meeting of the Population Association of America, San Diego, Calif., April 29-May 1, 1982.

North, David, and Marion Houston. 1976. *The characteristics and role of illegal aliens in the U.S. labor markets*. Washington, D.C.: Linton and Co.

Portes, Alejandro. 1981. International migration: Conditions for the mobilization and use of migrant labor under world capitalism. Chapter 2 in *Labor, class, and the international system*, ed. Alejandro Portes and John Walton. New York: Academic Press.

Poulantzas, Nicos. 1975. *Classes in contemporary capitalism*. London: New Left Books.

Reisler, Mark. 1976. *By the sweat of their brow*. Westport, Conn.: Greenwood Press.

Select Commission on Immigration and Refugee Policy. 1981. *U.S. immigration policy and the national interest*. Supplement to the Final Report. Washington, D.C.

Tienda, Marta (with the collaboration of Carl Bowman and C. Matthew Snipp). 1981. *Socioeconomic attainment and ethnicity: Toward an understanding of the labor market experiences of Chicanos in the U.S.* Springfield, Va.: National Technical Information Service.

Wright, Erik Olin. 1978. *Class, crisis and the state*. London: New Left Books.